September 1999
Volume 70
No. 9
$5.00

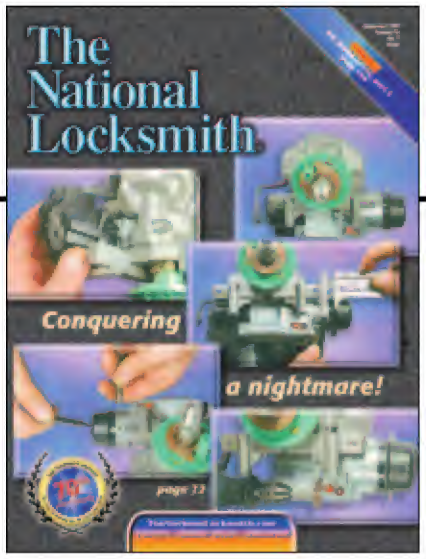
The National Locksmith®

CODES! GM 5000A-5711K, part 3 page 120

Conquering a nightmare!

page 12

On The Cover...



There are few ignition locks with a reputation that precedes them, but the Alpha Tech is one. Learn how to defeat it and what tools can ease the pain.

Publisher Marc Goldberg
Editor Greg Mango
Art Director Jim Darow
Production Director Edgar Shindelar
Technical Editor Jake Jakubuwski
Senior Writers
Michael Hyde, Dale Libby, Dave McOmie, Sara Probasco
Contributing Writers Tony Blass, Joe & Dee Bucha, Carl Cloud, Ron & Chris Curry, Sal Dulcamaro, CML, Steve Gebbia, CML, Giles Kalvelage, Jim Langston, Tom Lynch, Tom Mazzone, Don Shiles, Robert Sieveking
Director of Sales & Marketing
Jeffrey Adair
Advertising Account Manager
Debbie Schertzing
Circulation Manager Tom Dean
Accounting Manager Sheila Campo
Production Assistants Kim Fryer
Dave Krofel
Administrative Assistant
Bonnie Frederickson
Shipping Manager Mauro Mendoza

National Publishing Co.
The National Locksmith® ISSN #0364-3719 is published monthly by the National Publishing Co., 1533 Burgundy Parkway, Streamwood, Illinois 60107-1861. Periodicals postage paid at Bartlett, Illinois 60107 and additional mailing offices USPS 040110. Subscriptions $41.00 per year in the USA: $54.00 per year in Canada; $67.00 in all other countries. Single copies $5.00 each. Postmaster, please send change of address to National Publishing Co., 1533 Burgundy Parkway, Streamwood, Illinois 60107-1861.

The Audit Bureau Member

Questions or problems with your subscription? Call (773) 348-6358
For all other inquiries, call (630) 837-2044, fax: (630) 837-1210, or E-Mail: natllock@aol.com
See us on the World-Wide Web: www.TheNationalLocksmith.com

CONTENTS

The National Locksmith September 1999 • Vol. 70, No. 9

FEATURES

DEPARTMENTS

COMMENTARY

WORLD-WIDE WEB
www.TheNationalLocksmith.com

Time to clean house... Throw away your old magazines!

Do you save your issues of *The National Locksmith* too? I'm just about ready to throw away an entire shelf of copies. And I do mean a whole shelf. I'm gonna trash every issue I have from January 1988 to December 1998...all eleven years, all 132 issues, all 12,000 or so pages.

I can hear you gasping now! "Don't do it Marc! Think of all the articles on cars, safes, locks, installations, to say nothing of the tens of thousands of codes in those issues!" Well too bad. Out they go, over 100 pounds of paper, with the old coffee grounds and carpet sweepings.

And guess what? You can throw yours away too!

We now have something a lot better than paper copies of those magazine. We have placed all of them on CD. That's right, now you can read the articles and instructions, and see the photos. Heck, you can even zoom in on the photos for a better view.

Best of all, you can do all that right on your computer screen using our new five CD set that takes up no room on your shelf, and no room on your hard drive. Here's the deal. *The National Locksmith* on CD is a set of five compact disks. You must have a computer with Windows95 or later and a CD drive.

Just pop in a CD and look in the Article Index for information you want to view. All eleven years are indexed by both subject and article title. Subjects include Automotive Domestic and Foreign, Access Control, Codes, Electronic Security, Safe, plus dozens and dozens more. You can browse the topics in the 56 page index, or you can search the entire index in seconds using the key word search feature.

Once you locate the article or information you want to read, the index tells you which of the five CDs contains it. Just pop in that CD, go to that issue by clicking on the link. You'll find that all the magazines' table of contents are linked directly to the articles. Just click on the article you want to read, and instantly, you're there.

You'll never be lost when using *The National Locksmith* on CD. That's because no matter which part of the set you're using at the moment, you always have access to the entire Article Index. That way you are always just seconds from locating the facts you need, when you need them.

Also on the the CDs you'll find cool locksmith related web site links. Almost all of the original articles appear on *The National Locksmith* on CD. Dave McOmie's articles are not on the CDs, but will appear later as a separate set. But the good news is scads of other safe articles do appear on the CD set.

And yes, you can print out whatever articles you want in case you don't want to read them on the screen. Print any page, key word search, indexed articles, links...what more could you ask for? Well you could ask for an inexpensive price. How does $99.95 sound? Yep, you can have all 12,000 pages on CD for just under a hundred bucks.
See page 27 for more information.

Marc Goldberg

Marc Goldberg
Publisher

Have questions? Want free technical help? Free Locksmith Forums!
www.TheNationalLocksmith.com

Mango's Message

Greg Mango
Editor

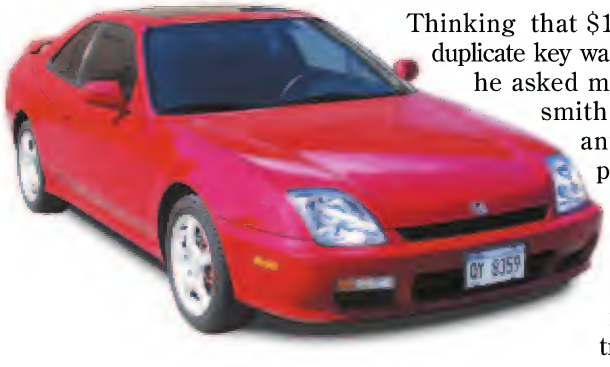
Transponder Trap

For years, insurance companies as well as the general public, have been applying tremendous pressure on the automobile manufacturers to improve vehicle security to reduce auto theft. In 1986, General Motors catapulted to the forefront of vehicle anti-theft system designs with the introduction of the Vehicle Anti Theft System (V.A.T.S.) on the 1986 Corvette. Since that time we have seen the advent of a number of anti-theft system designs, such as: Passlock I, PASS-KEY III, Smart Key Immobilizer System (S.K.I.M.), Passive Anti Theft System (P.A.T.S.), P.A.T.S. 1, P.A.T.S. 2, Nissan Anti-Theft System (N.A.T.S.) and Drive Authorization System (D.A.S.), to name just a few.

There is no argument that transponder technology will, and is, greatly reducing the number of automobile thefts. That's the good side. The introduction of V.A.T.S. alone drastically reduced the number of stolen Corvettes, christening the program a staggering success. The bad side is, with every vehicle anti-theft system featuring properties unique to the given manufacturer, equipment costs to service such vehicles is staggering, and even then, many systems are proprietary dealer only items. All this technology and inherent limitations has sent the locksmith industry into a bit of a quandary.

Members of the locksmith industry, however, are not the only ones in a quandary. Recently, Dave Krofel, a production assistant here at *The National Locksmith*, purchased a used 1998 Honda Prelude SH. Unbeknown to him, this shiny red Prelude featured a transponder and Dave was about to experience the underbelly of transponder technology, which the general public is not yet aware of.

When Dave purchased the car, he received only one key. He was unaware there should have also been a Valet key, and most importantly, a red headed master/programming key. A couple of days later, Dave visited a Honda dealer to purchase some touch-up paint. While there he inquired about the cost of getting a couple of duplicate keys made. He was told it would be $15.00 per key. Not in any hurry to get it done, he thought he would just do it another time.



Thinking that $15.00 for a duplicate key was expensive, he asked me if a locksmith would be any less expensive. I informed him that his sporty pride and joy featured a transponder and if the dealer was only charging $15.00 (which didn't seem right to me) he had better get it done, because a locksmith would not be any less expensive. In hindsight, I'll bet the dealer only gave him the cost of a new transponder key blank and didn't include the programming charges.

A few days later Dave was shopping at a mall and noticed another Honda dealer across the street and decided to have his duplicate keys made. When he arrived, this dealer told him the cost would be $70.00. After being quoted $15.00 from another dealer he wasn't about to pay $70.00 so he left.

Finally Dave called the Honda dealer where he purchased the vehicle and was told that he would need to make an appointment, bring in all his keys and leave the car for about an hour. He made the appointment and when he arrived the service technician asked for his keys and told him it would be about $70-$80.00 which included the key and programming labor. Dave handed him the one key he had when the technician asked, "Where's the red headed master key?"

"What red headed master key?" Dave responded.

Dave was soon informed that without the master/programming key, they could not make a duplicate key and therefore would instead need to replace the Immobilizer Control Unit, which would include a new Master key and Valet key for the mere price of $1,000.00!

After recovering from the initial sticker shock of replacing the Immobilizer Control Unit, Dave decided to speak with the used car salesman from whom he purchased the car to see if the previous owner still had the master key and valet key. Fortunately for Dave, they did. I would venture to say that if someone else was given the same scenario, they would not be so lucky.

As time goes on and more and more transponder equipped vehicles are circulating and being sold off used car lots, this is a scenario that will surface again and again. With the introduction of transponder duplicating/cloners recently (Jet, Ilco/Silca, Curtis) this problem will be circumvented. But what about those who lose all their keys? I believe there will be enough customer dissatisfaction that something will be done to ease the pain and eliminate the irate customer service calls that the dealers and manufacturers are sure to receive.

Just what that something is, however, only time will tell. TNL

Letters

The National Locksmith is interested in your view. We do reserve the right to edit for clarity and length.

Looks Good To Me

Regarding the phone call and e-mail message that the both of you (Marc and Greg) received about your "appearance" in the magazine, I think you guys look pretty sharp. There is no need for a $1,500 Versace suit.

I'm sure you guys put out a better image than I did a few weeks back. I worked on five cars in a row under very hot and humid conditions. The last car was a 1990 Mazda Protégé, dark blue, windows all up and parked in the sun. There were no keys. When I left I sure needed clean clothes and a shower. I guess I blew my image that day.

As for Mango's Message about "Lifetime Warranties," (June '99) I have little luck with them. They will lure you with phrases like "100% money back, no questions asked," "Satisfaction Guaranteed." Just try and get it! There are a few that will honor their claim, but very few.

I was preparing a TV Dinner recently, (my wife went to Alaska) and the package said, "Guaranteed," and that's all. Guaranteed for what? That guarantee had more holes in it than 100# of Swiss Cheese.

A radio broadcast I listen to regularly has two of the most ludicrous claims I have heard. One is for golf clubs that "Guaranteed to lower your golf score or your money back."

The minute I drop my check in the mail I am risking my money.

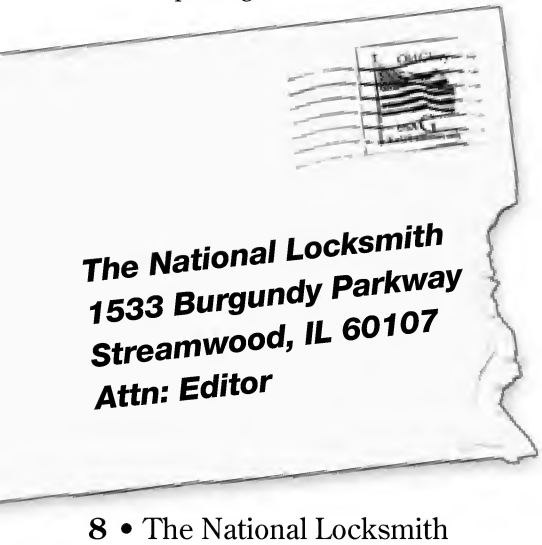
The other "Guarantee" is a carbon copy only a different product. An educational game "Guaranteed to raise your child's marks a full letter grade or a full refund." I don't think so.

I'm very cautious in my dealings. Yes, I've been stung in business, however, I do have a supplier in Detroit whom I buy 90% of my supplies from. If I have a problem with their products, they take care of it. In fact, they will go the extra mile.

The only real success I have with guarantees is at the super dooper mega store. If I am having a legitimate complaint about a product the manager is quick to satisfy me. He/she doesn't want an angry customer at the service desk. It's not good for business.

The community I live in is small compared to metro areas and relatively safe. I don't give my customers guarantees per say. I tell them if there is a problem with my workmanship contact me and I'll take care of it. It has worked well for me the 14 years I have been in practice locksmithing. I found that if there is a problem and you take care of it quickly, then the customer is happy and very unlikely to get irate with you. A promise kept carries much more punch than a promise made.

Tom Seager
Michigan



No Pay No Play

I have been opening locked cars and trucks for over 30 years now and consider myself an expert in this field.

Recently I was contacted by Geico Insurance to service their customers in my area and open locked cars with keys inside, and if possible, make keys for them if lost.

I thought I would give them a try and did one job for them for which I am still waiting for payment after two months.

I called several times, sent photocopies of the invoice and the only response I got was that they did not receive the copy.

I consider myself lucky that I didn't do any other jobs for this group, considering what other locksmiths have had to go through with similar companies trying to get their invoices paid.

Bob Galcik

Security Café

DROP IN FOR TOOLS, TECHNOLOGY & EQUIPMENT

The Gator Tool

CIRCLE NUMBER 262

Sieveking Products Company is proud to distribute the new Gator Tool. This unique tool can quickly remove the cap from most auto-motive lock cylinders, without damage. The Gator Tool will uncrimp the rim of the cap, without destroying it. This allows the cap to be reused, in most cases. The same tool will recrimp the cap onto the lock cylinder. Made of the finest hardened steel. Nickel plated for rust resistance. The uncrimp tool bit is replaceable. The Gator Tool will easily stake the tumbler spring retainer on most GM sidebar cylinders. Gator Tools are available for immediate delivery.

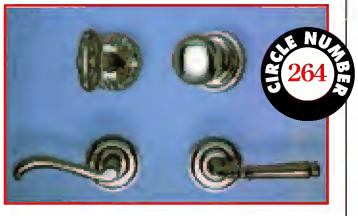
CIRCLE NUMBER 263

The Deadbolt Anchor

The Deadbolt Anchor™ is a totally concealed door jamb reinforcement device designed to provide maximum security against the most common type of forced entry.

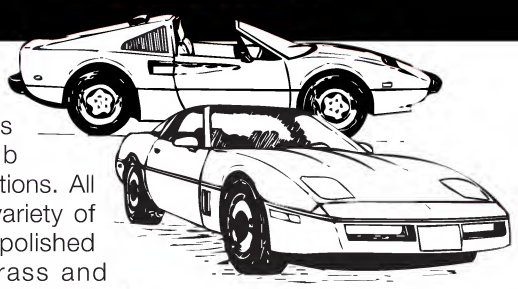
The Deadbolt Anchor™ is unique in that it is hidden from view, behind the doorjamb. The Deadbolt Anchor's ™ pocket extends through the jamb, to just behind the deadbolt strike plate. Instead of just a wood frame and strike plate for the deadbolt latch to fit into, the deadbolt latch will fit directly into the Deadbolt Anchor's™ steel pocket. When an attempted break-in does occur, the pocket will protect the jamb from being destroyed by the deadbolt latch and transfer the force directly to the wall framing. Three 3" screws secure the jamb and Deadbolt Anchor™ to the center of the wall studs.

Omnia Offers Seven New Interior Latchsets



CIRCLE NUMBER 264

Omnia Industries has introduced seven new interior latchsets to further expand their extensive line of solid brass locksets.



These new traditional and ornate designs include both knob and lever configurations. All are available in a variety of finishes, including polished and lacquered brass and polished chrome. Some models can be ordered in additional finishes including shaded bronze and satin chrome or nickel.

Corby's 6500 Programmable Keypads

CIRCLE NUMBER 265

The new 6500 Series Programmable Keypads from Corby Industries, Inc. are available in eleven different styles including indoor, outdoor, heavy-duty, spy-proof and parking lot models. These keypads provide an array of sophisticated access control features. Operating at 12 or 24 VDC a door (or other relay-controlled devices) can be activated for up to 165 users, it can be programmed, from the keypad, using a three to six digit code length.

The keypad provides up to four input conditions, supporting Request-To-Exit, a silent panic input, and with the addition of a magnetic door contact, it will report a door ajar and or forced entry condition.

National Locksmith Automobile Association

CIRCLE NUMBER 266

Do you work on cars? Then you know how difficult it can be to stay on top of the thousands of details involved in over 440 makes and models of foreign and domestic cars found on the road right now.

If you would like to make bigger profits in the field of automotive locksmithing, you should join the National Locksmiths Automobile Association (NLAA). The NLAA will provide you with a special newsletter every month called The Automotive Edge. This publication is a special car report each month taking difficult and common cars with which we service.

We show you step by step how to perform every function on the cars, from opening, to dealing with airbags and transponders. You'll learn and see how to get the locks out, how to dismount the columns if necessary and you will build a reference library, perfect for bringing with you to the job.

If you have ever once had to pass up or waste time on a car job, the NLAA is for you! The first job you do successfully with help from NLAA pays for your entire year's membership. TNL

COVER STORY

THE ALPHA TECH COLUMN

by Tom Seroogy & Tom Mazzone

Introduced in the 1991 Chevrolet Cavalier (J Body), the Alpha Technologies equipped column was GM's first attempt at a column not following the standard Saginaw column design. This ignition is also included on the 1992 and 1993 N Body vehicles (Pontiac Grand Am, Buick Skylark, and Oldsmobile Achieva), and continued through the 1994 Cavalier.

Introduction

Made by Alpha Technologies, a subsidiary of Nissan, the AlphaTech ignition (as it has become to be known) is probably best known for the service problems that constantly plagued this lock.

Utilizing the first double-sided key to be used on a domestically produced GM vehicle, the loose and inconsistent tolerances and non-serviceability of this lock made even key generation by code unpredictable.

The first generation model used a grooved keyway that was notorious for key breakage. Despite moving to a non-grooved keyway to eliminate the key breakage problem, other maladies caused the early retirement of this lock design.

This lock utilized the same 00J0-99J9 and 00K0-99K9 code series as its single sided key predecessor, placing the cuts onto a double-sided laser cut key. During first key generation, laser cutting the key helps increase the success rate by helping to offset any spacing inconsistency the lock may have, as well as decreasing the amount of wear to the tumblers and key during use.

In short, this lock was not designed to be a serviceable item, and should not be taken apart or disassembled unless necessary. Because key codes are not stamped on this lock, only three options are available should a key need to be generated.

First, and generally recommended, is to replace the lock. Second, the lock, once picked, can be impressioned. Finally, by using the AlphaCracker depth finding keys by Saber Tool Company, a working set of keys can be made without any disassembly or drilling.

Although there are methods for key generation requiring the disassembly of the lock, the design of the lock and the liability using such methods are not worth the trouble or risk.

1. Hidden beneath the steering wheel are two T15 screws.

2. Remove the tilt lever arm.

3. Use a T20 Torx driver to remove the shroud screws found at the bottom of the column.

4. Lift the top shroud half up and out from the bottom shroud.

Method A - Replacement

NOTE: Factory procedure recommends complete column removal before proceeding. The purpose for this is to assure that metal shavings developed while drilling and removing the ignition's mounting screws don't fall into and short out the wash/wipe and turn signal switches attached to the ignition housing.

If factory procedure is not followed, care must be taken to remove both the switches from the housing area during its removal.

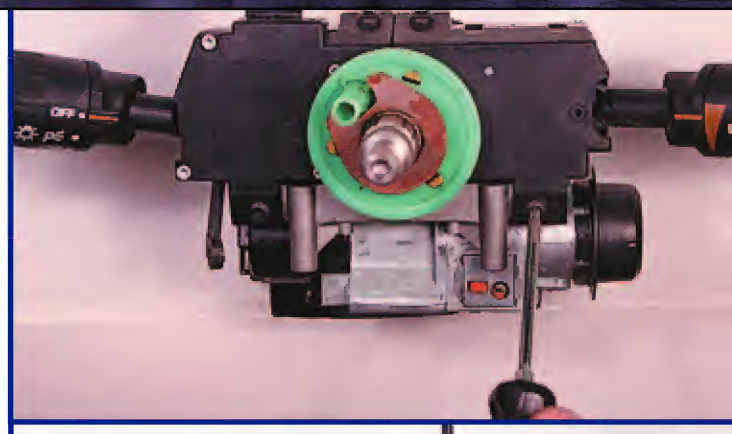
Be aware, however, that should a wash/wipe or signal switch failure occur due to metal shaving penetration, any factory warranty is void and the technician may be held liable for failing to follow factory service procedures.

1. Remove the hornpad and the steering wheel. Despite having a two piece clamshell column shroud, two screws fastening the upper and lower shroud together are placed directly behind the steering wheel, requiring the wheel's removal before the shroud can be removed.

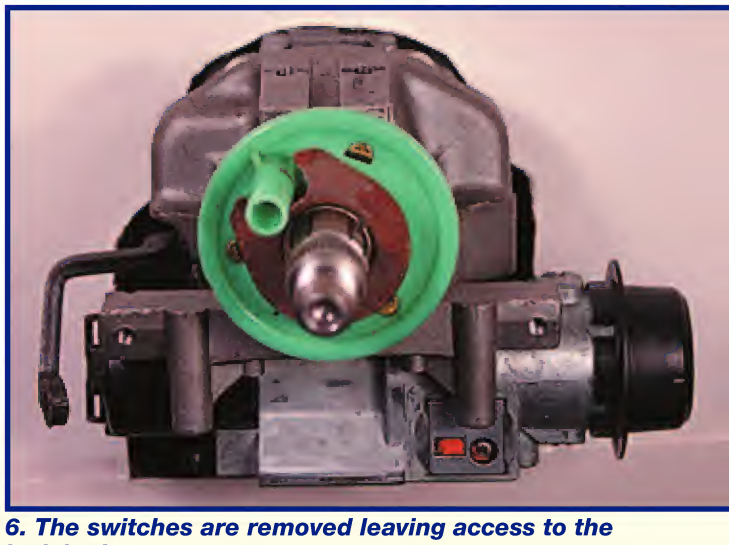
After removing the steering wheel, use a T15 Torx driver to remove these screws. *(See photograph 1.)*

2. Before removing the bottom shroud screws, it is generally easier to remove the tilt lever arm at this time. This arm simply unscrews.

If the arm cannot be removed by hand, wrap the base of the stalk with a strip of leather or piece of rubber vacuum line. If these are not available, use masking or electrical tape to thickly wrap the bottom portion of stalk. Then, gently, but firmly, grasp the arm with a vice grip to unscrew.



5. Remove the four screws holding the wash/wipe and turn signal switches.



6. The switches are removed leaving access to the lock body.

It is sometimes difficult to remove this arm without causing some minor damage. Be prepared with some fine emery cloth and satin black spray paint for touching up any scratches. *(See photograph 2.)*

3. After removing the two screws on the face of the column and the tilt lever arm, use a T20 Torx driver to remove the three screws at the bottom of the shrouds. *(See photograph 3.)*

Then tilt the top shroud up and pull out to separate the shroud halves. DO NOT use force.

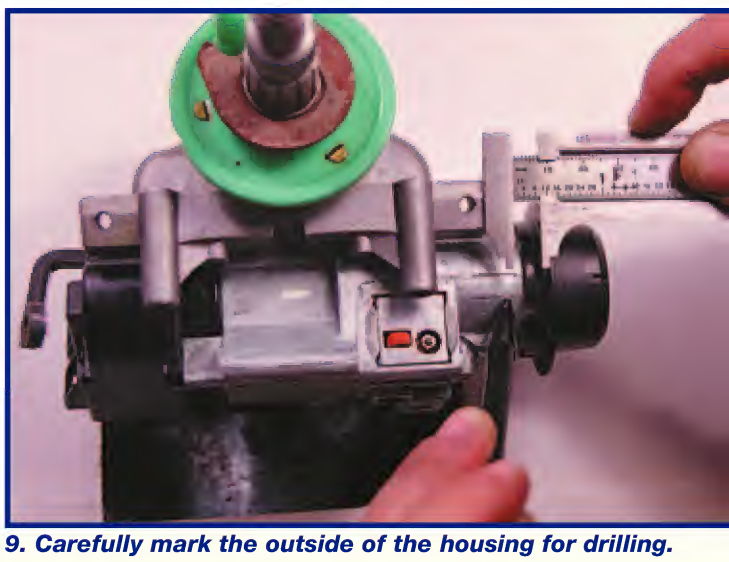
7. Remove the top and bottom screws that hold the ignition.

Even after removal of all the screws, the top shroud is attached to the bottom half via a tab and slot at the back of the column. Lifting and pulling the top shroud disengages the tab of the top shroud from the slot on the bottom shroud. *(See photograph 4.)*

4. Using a T25 Torx screwdriver, remove the screws that fasten the wash/wipe switch and turn signal switch to the steering column. There are two screws per switch, one on the lower part of the face of the switch and one at the top. Once detached, let the switches hang by their wire looms.

Remember, extreme care must be taken to prevent metal chips from entering the switches. As a precaution, cover the switches with a shop rag or plastic bag. *(See photographs 5 & 6.)*

8. Maneuver the switch around the tilt arm and away from the lock. Carefully mark the outside of the housing for drilling.

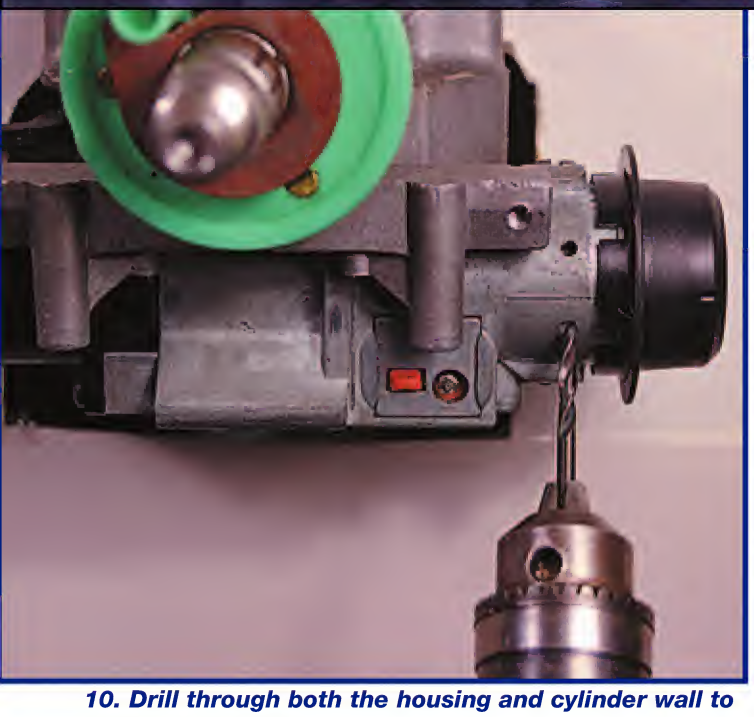


9. Carefully mark the outside of the housing for drilling.

5. Use a T15 Torx driver to remove the two screws holding the ignition switch on the back of the housing. *(See photograph 7.)*

Gently maneuver it out and around the tilt lever arm and let it hang by its loom. *(See photograph 8.)*

6. On vehicles equipped with an automatic transmission, during normal removal procedure, a key is available to turn the key to the ON position. This is necessary in order remove the shift interlock cable.



10. Drill through both the housing and cylinder wall to reach the sidebar.

Unfortunately, the locksmith typically becomes involved when no key is available. Therefore, an alternate means of turning the lock to the ON position is necessary. In this method, we will pick the ignition.

Because this is a sidebar lock, it is necessary to first locate and depress the sidebar for picking. To reach the sidebar, measure and mark for drilling a hole. Make the mark at 3/8" back from inside facecap flange and 1/4" down from the casting line visible on the housing. *(See photograph 9.)*

11. Once the hole is complete, use a probe to place pressure on the sidebar while raking the tumblers.

Before drilling, there are two walls to penetrate: the outer housing wall, and an inner cylinder wall. Be careful not to over drill as this will destroy the sidebar, further complicating ignition removal.

7. After marking, use a 1/8" diameter drill to drill through the housing and the cylinder wall. Because the lock is to be replaced, a larger drill bit may be used if desired. *(See photograph 10.)*

8. Then use a thin probe to exert pressure on the sidebar. With pressure applied, rake the top and bottom wafers of the ignition. When the sidebar drops and seats into the sidebar notches of the wafers, the lock is picked. Turn the lock to the ON position. *(See photograph 11.)*

9. Using a small flat blade screwdriver, depress the shift interlock cable connector and remove the cable. *(See photographs 12 & 13.)*

10. Then use a 1/4" drill bit to drill off the heads of the ignition retaining clamp bolts. Be careful not to let any of the metal shavings get into the wash/wiper and turn signal switches. *(See photograph 14.)*

11. Thoroughly clean up all metal shavings from inside the vehicle.

12. Install the new ignition lock. In order to reinstall the shift interlock cable it is necessary to turn the lock to the ON position.

13. Tighten the shear head bolts until the fluted head portion of the bolts break away (approximately 97 in. lbs.). *(See photograph 15.)*

14. Reverse remaining procedure.

Alternate to Method A

As an alternative to drilling and picking the lock in order to remove the shift interlock cable, complete steps 1 through 5 of Method A and the use the following procedure:

1. Use a Dremel or other hobby tool with a cutting wheel to carefully cut through the staked area holding the saddle in the lock housing. *(See photograph 16.)*

2. Work the saddle loose and pull it out from the housing as far as possible. Then use a small flat blade screwdriver, depress the shift interlock cable connector and remove the cable. *(See photograph 17.)*

3. Finish by completing steps 10 through 14 of Method A.

Method B -Impressioning

Complete steps 1 through 8 of Method A before starting this procedure.

1. File knife edge on both sides of a Strattec (formerly Briggs & Stratton) #322046 (Ilco P1099) keyblank and insert into the ignition.

2. Use a probe to depress the lock's sidebar.

3. Rock the key up and down following standard key impressioning techniques.

4. Remove key and check for impression marks. Remember that this lock has opposing wafers with the even space tumblers (2, 4, and 6) coming down from the top and the odd space tumblers (1, 3, and 5) coming up from the bottom. File or use a code machine to cut at the impressioned spaces.

5. Continue impressioning until a working key has been generated. Transfer the cuts to a fresh blank. The key is complete.

6. Reverse order for reassembly.

Method C - AlphaCracker

Probably the fastest method for generating an Alpha Tech key is through the use of the AlphaCracker depth finding keys by Saber Tool Company. *(See photograph 18.)*

Although this tool does take some practice, not having to do any disassembly of the lock or column is an added benefit that shouldn't be overlooked.

12. After turning the ignition to the ON position, use a small screwdriver to depress the shift interlock cable release tab.

13. Pull the shift interlock cable out from the housing.

For a set of the keys and full instructions contact Saber Tool Company, 2511 W. Schaumburg Rd., Ste 213, Schaumburg, IL 60194, 708-843-1017.

To give the locksmith some understanding on the use of this tool, the following abridged edition of the instructions follow:

Working Overview:

The AlphaCracker depth finding tool consists of four keys for determining the depths of each wafer in the Alpha Technologies ignition found on 1991 through 1994 Cavaliers and 1992 through 1993 Grand Ams, Skylarks, and Achievas.

In its simplest terms, the shallowest cut key to slide below a wafer, indicates that wafer's depth.

For example, if key #1 is inserted into the ignition's keyway and passes below the wafer, the depth of this wafer is 1. *(See photograph 19.)*

If the key is inserted into the keyway and is stopped by the wafer, the depth of that wafer is deeper than the key being inserted. *(See photograph 20.)*

For example, if the #1 key is inserted into the ignition's keyway and the wafer drops below the wafer contact point and prevents the key from being inserted any further into the keyway, then the correct depth is deeper than a 1 depth. It is either a 2, 3, 4 or 5.

Remember, the correct depth for the wafer is determined by the shallowest key to slide below the wafer.

Alpha Tech Ignition Overview:

The Alpha Tech ignition is a six position, true double-sided lock, incorporating wafer tumblers with sidebar.

When a key is inserted into the lock, tumblers 2, 4, and 6 are located on the top and tumblers 1, 3 and 5 are located on the bottom.

There are 5 possible depths for each tumbler.

All General Motors/Strattec (Briggs & Stratton) rules apply.

Both sides of the key must be cut for the key to operate the lock.

Using the AlphaCracker Keys:

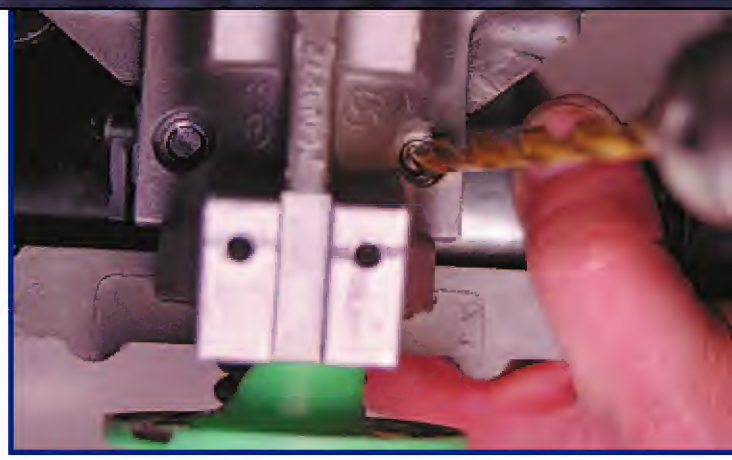
Before you start

- Always make certain the keys are inserted perpendicular to the keyway. Tilting keys up or down may allow them to bypass wafers, rendering an incorrect reading.
- Press on the key such that the uncut or bottom edge of the depth key's blade comes into contact and rests flat within the plug.
- Start with the #1 key and work progressively towards the deeper #5 key
- Each key is marked with a Key Number, indicating its depth.

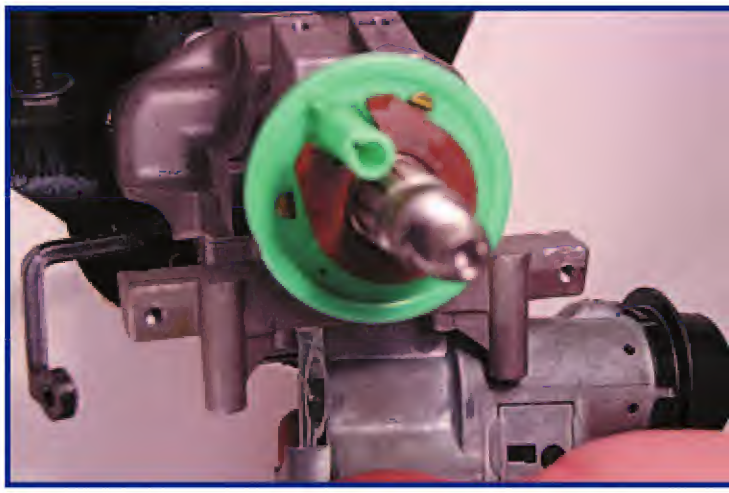
An Odd/Even Wafer Indicator designates what set of wafers are being read (E designates that even, or top, wafers 2, 4, and 6 are being read. The Odd side is unlettered to avoid confusion, and reads bottom wafers 1, 3 and 5);

A Position Index mark indicates the space being read.

- Due to the construction of the Alpha Tech ignition, the #2 and #3 wafers share the same depth key (marked 2/3). When this key is used, the wafer may be either a 2 depth or a 3 depth. To determine the correct depth see special instructions.



14. Locate and center punch the shearhead bolts found at the top of the column.



15. Remove the old lock and reinstall a new lock.

16. Use a cutting wheel to remove the staked area holding in the saddle.

17. Use a small screwdriver to pry the saddle out.

Starting:

1. Insert Key # 1 into keyway with the E facing towards you. You will be determining the depths for spaces 2, 4 and 6.

2. Push the key into the keyway until the first Position Index mark is aligned with the face of the ignition lock. This is wafer #2. *(See photograph 21.)*

3. Push the key into the wafer. If the key slides past the #2 Position Index mark to the next Position Index mark, position #2 is a 1 depth.

4. If the key stops at this position, wafer #2 is deeper than a 1 depth. Insert the next depth key, the 2/3, up to the #2 Position Index mark.

5. Push the key into the wafer. If the key slides past the #2 Position Index mark to the next Position Index mark, position #2 is either a 2 or a 3 depth.

6. If the key stops at this position, wafer #2 is deeper than a 2 or a 3 depth. Insert the next depth key, the 4, up to the #2 Position Index mark.

7. Push the key into the wafer. If the key slides past the #2 Position Index mark to the next Position Index mark, position #2 is a 4 depth.

8. If the key stops at this position, wafer #2 is deeper than a 4 depth. Insert the next depth key, the 5, up to the #2 Position Index mark.

9. Push the key into the wafer. If the key slides past the #2 Position Index mark to the next Position Index mark, position #2 is a 5 depth.

10. Once the depth for position #2 has been determined, insert key #1 up to the #4 Position Index mark using the Wafer Slide to lift and bypass wafer position #2. Once position #2 has been passed, remove slide. *(See photograph 22.)*

11. Repeat steps 2 through 10 to determine the depth of position #4 and move on to position #6. If the user finds difficulty reading position #6, progressioning the depth for that space is recommended after completing step 12.

12. Turn the keys over to read the odd wafers 1, 3 and 5. Repeat steps 2 through 10 for each wafer. Progression position #6 after positions 1 through 5 have been determined. Using GM rules will help.

Special Instructions – The 2/3 Key:

Due to the nature of the Alpha Tech ignition, it is not possible to use the AlphaCracker depth finding keys to determine whether a wafer is a 2 depth or a 3 depth.

Once a wafer has been determined to be a 2/3 depth, three methods can be used to determine the actual depth of these wafers.

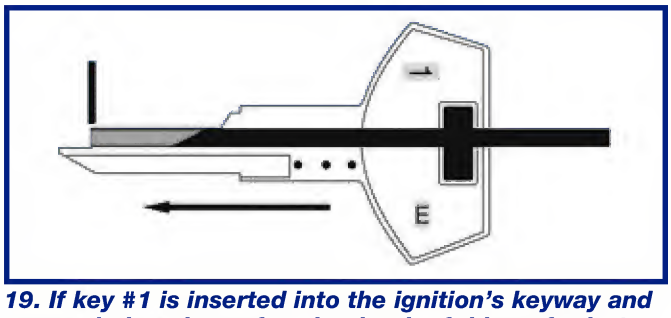
1. Following the GM key bitting rules, use the process of elimination to determine the correct depth for each 2/3 wafer.

- The key bitting must add up to an even number.
- MACS factor of 2.
- No more than 3 of the same depths can be next to each other.
- No more than 4 of the same depths can be used in the same bitting.

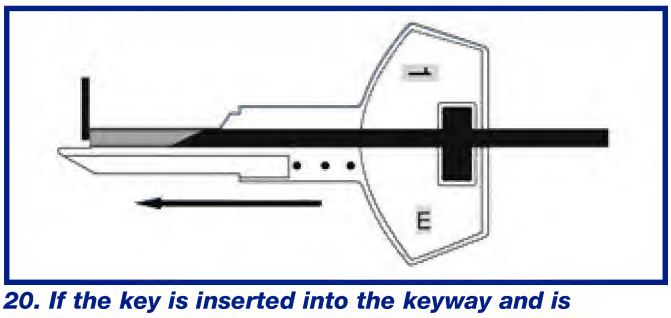
2. Starting with all cuts at 2, progression all 2/3 cuts until the correct key is found.

3. Cut all 2/3 wafers to a 2 depth and file to a 2-1/2 depth.

18. The AlphaCracker by Saber Tool Co. is a fast method for generating working keys for the Alpha Tech ignition.



19. If key #1 is inserted into the ignition's keyway and passes below the wafer, the depth of this wafer is 1.



20. If the key is inserted into the keyway and is stopped by the wafer, the depth of that wafer is deeper than the key being inserted.

Insert the key into the ignition, using an impressioning tool or vise grips to apply slight turning pressure on the key.

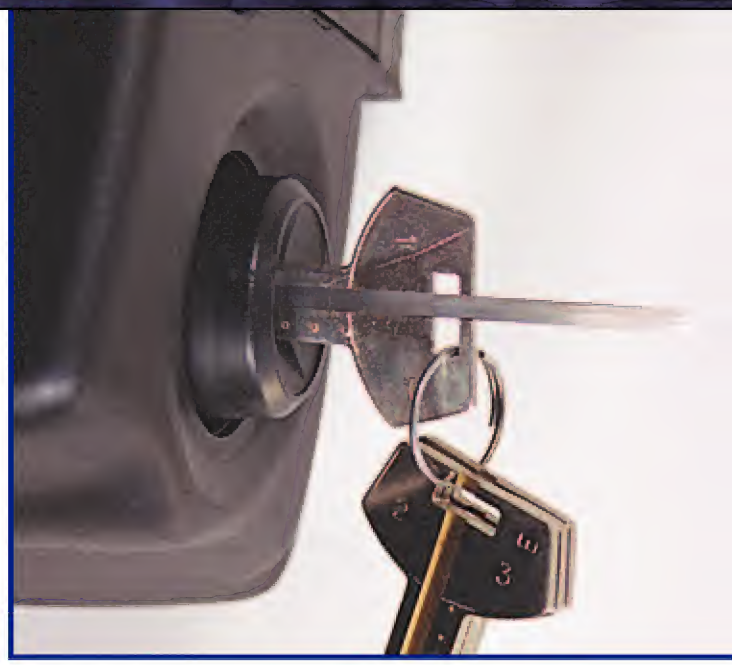
Gently rap the bow of the key on the top and bottom using a small mallet until the key turns.

A secondary sidebar broach may cause the plug to catch in the "ON" position. This is not desired, as impression marks cannot be obtained. If the ignition has turned too far and the sidebar has fallen into this second broaching, simply apply pressure and turn the key back towards the "OFF" position.

With the ignition between the "ON" and "OFF" position, bump the key up and down to obtain impression marks.

Cut a new key. In the 2/3 positions that did not yield an impression mark, cut these to a 2 depth. In the 2/3 positions that did yield an impression mark, cut these to a 3 depth.

21. Push the key into the keyway until the first Position Index mark is aligned with the face of the ignition lock.



22. Insert key #1 up to the #4 Position Index mark using the Wafer Slide to lift and bypass wafer position #2.

For more information and pricing on the AlphaCracker, contact: Saber Tool Co., 2511 W. Schaumburg Rd., PMB 213, Schaumburg, IL 60194. Phone (630) 872-1017. Or take your web browser to www.sabertool.com. Circle number 281 on the Rapid Reply Card.

The authors of this article also wrote The National Locksmith's GM Steering Column Course. The course is the finest reference anywhere covering all GM Columns. It is available through this magazine or through the online store at TheNationalLocksmith.com. TNL

To Clone or Not To Clone

that is the question

Is it more profitable to own a transponder cloning/duplicating device, and reap from the preponderance of transponder equipped autos? Or, is valor better served if one should send the customer to a dealer for duplicate keys?

If only I had the wisdom of Solomon, and could answer.

If I should answer "Yea," I might clone and prosper. But, if I answer "Nay," to decline the opportunity, ignoring the possibility for monetary gain, might I miss my mark? Might I fall short of my desire to give the best and most complete service to valued customers? Surely not!

There are those among us who will take up the challenge, shoulder the burden, and move boldly into the Twenty-first Century. They will serve the needs of those in want of transponder keys. They will reap the benefit if standing at the ready, when opportunity raises the call. It is for those brave souls that I pen this short review.

Read on, for the world of opportunity lays before you.

by Bob Sieveking

Our world is changing, and change we must, if we are to survive. Transponder equipped autos are and will become more the rule and less the exception, as we begin the year 2000. The "Big Three," (Ford-Chrysler-GM) all offer transponders as standard equipment on many models. All Ford Motor Company autos, except the Escort (Tracer), for 1999 are equipped with transponder security. The Ford Escort/ Mercury Tracer model will end production with the 1999 model year. Ford ngsPATS is the rule, not the exception. Many 1999 GM autos and SUV's use the PK3 transponder system. Chrysler offers the Sentry transponder system as an option on most of their vehicles. Most of the foreign auto makers offer transponders on their high-end autos, and this is only the beginning.

Though originating keys for the transponder equipped autos may demand a sizable outlay for diagnostic and programming devices, duplication of many of the transponder keys is not quite as demanding. There are three major players in the game of transponder key cloning/duplicating. They are ILCO/Silca, Jet, and Curtis. They all offer electronic devices that will clone/duplicate most all of the clonable transponder keys. Ilco and Jet manufacture a similar line of transponder key blanks. Jet however, has recently offered some interesting variations on the GM and Nissan transponder key blanks.

1. The front panel of the Silca RW2 and Curtis CI-4.

2. The rear of the RW2.

3. The RW2 is also supplied with a 3-1/2" floppy disk.

Not all transponder systems allow "cloning/duplicating." Some systems are protected by rolling codes (the key returns a different signature each time it is queried). Some systems use a mathematical algorithm, which processes the query made by the vehicle microprocessor, and returns a code that has an infinite number of possibilities.

For those systems that can be serviced by other than the dealer, there is the clone/duplicating device, or transponder duplicator. The transponder read/write device will allow the locksmith to copy the mechanical portion of the key then read the transponder code of the customers key and impress this code onto an after market programmable transponder blank. The clone/duplicator is born.

Many transponder systems have capacity for only a limited number of transponder codes. With cloned/duplicated keys, there can be an unlimited number of "second keys" made for these vehicles. Because they are all clones, they will all use only one transponder code. The auto microprocessor cannot tell the difference. This is an advantage of cloned/duplicated keys over multiple different transponder keys.

ILCO/Silca RW2 and Curtis CI-4

The first transponder Read Write duplicator (2) we will look at is the ILCO/Silca RW2. If you compare the ILCO/Silca RW2 to the Curtis CI-4 (CI= Curtis Industries) you will find no noticeable difference. The two transponder machines are virtually identical in every aspect of operation.

Photograph 1, shows the front panel of the Silca RW2 and Curtis CI-4. There are three main features indicated.

There is the "Key Receptacle," which houses the read/write antenna. When a key is placed in the key receptacle, the programming device can pulse the transponder of a programmed key to find the response. The transponder chip will respond to a query by giving up its transponder code. The antenna of the receptacle will receive the code and record it in short term memory. If the key is to be duplicated, you would remove the original and place an unprogrammed key into the receptacle. The antenna would then be used to read back the code and impress it onto the new key.

The second feature of the front panel is the "LCD Display" (Liquid Crystal Display). The RW2 has a 2 line, 20 characters per line, display. It is used to prompt the operator to take specific actions during operation. It is also used to display the transponder codes read from the original key, or entered by the operator on the keypad. The display will also indicate the manufacturer and type of transponder being read. If you are programming a key from a previously recorded transponder code, it will indicate the memory location (internal to the RW2) of the transponder code.

The RW2 can record and keep record of up to 99 transponder codes. Lost keys can be replaced and programmed without the need for any other computer devices. The RW2 will also interface with your PC to record and "archive" transponder codes.

The last feature of the front panel is the "Keypad." The keypad allows the operator to direct the programming device to take specific actions. The keypad can also be used to enter a known transponder code into the programmer, so that it can be impressed onto an unprogrammed blank transponder key.

The number/letter keys are pretty much self explanatory. Transponders use "hexadecimal" codes, therefore there are sixteen keys. (1 thru 0, and "A" thru "F". Letters "A" thru "F" represent the decimal numbers 11 thru 16.) The double arrow keys are used to scroll and navigate the cursor through the menu items on the LCD Display. The "Rd" and "Wr" keys indicate "read" and "write" functions. The "ESC" escape key allows you to back up, exit, or cease a particular action. The "ENTER" key is the affirmative key. It OK's, initiates, or completes programming functions.

Photograph 2, shows the rear of the RW2. At the rear of the machine there

is an auxiliary power receptacle that allows use of a 15V (volt) transformer, supplied by the manufacturer, to operate the duplicator. The 15V input also charges the rechargeable 12-volt battery, internal to the unit. The Power ON/OFF switch is at the center of the rear of the machine. On the right, is an RS232 (9-pole) data port that will allow the RW2 to be connected to your PC desk top or lap top computer. You must supply the connecting cable.

The RW2 is also supplied with a 3-1/2" floppy disk, like the one shown in *photograph 3*. It contains the utility programs (3 utilities) necessary to archive transponder codes to a computer. It also contains housekeeping utilities, to organize the information by customer name or pass word, and to open the programming for update. The current units ship with version 1/1 of the utilities. They are "TRANSRW2.EXE," "TRANSOFT.HEX," and "TRANSFER.BAT." I was unable to open the utilities with a Macintosh, but there is no problem if you have a PC.

The RW2 is a menu driven device. This means that when the power switch is turned "on" the LCD Display will prompt or ask questions that will lead you through all the steps necessary to; identify, interrogate, display code information, program new keys, and store transponder code information.

ILCO/Silca RW2 and Curtis C1-4 Programming

Let's run through a simple transponder duplication. For our test, I went to the local Mazda dealer to find a 1999 Mazda 626 LX. The key used was an ILCO MAZ24RT5.

When power is turned "on" the display will read "** WAIT **." the processor is reading the resident programming. In a few seconds, the display changes to read "CONNECTED TO PC ". This is a question. I am not using a PC, so I touch the "LOC/REM" (local/remote) key to tell the processor I am not connected to a PC.

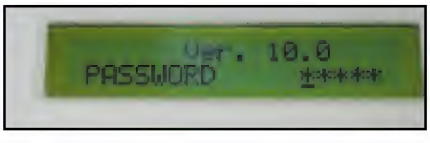
The LCD Display changes immediately to the screen you see in *photograph 4*. It notifies you that you are operating in "Version 10.0," and asks for your "PASSWORD."

When you receive your new RW2, it will be shipped without the Password. You must register the unit with the manufacturer to receive your password. This is a security measure that insures that your machine and serial number is registered in your name.

When the Password has been correctly entered, the screen will be as you see in *photograph 5*. Press the enter key to enter the password. The Display will change briefly to "PASSWORD OK," and the processor will launch or open the programming.

If the Password is entered incorrectly, the LCD Display will show "PASSWORD ERROR PASSWORD - - - - -." You will have

4. The LCD Displays you are operating in "Version 10.0," and asks for your "PASSWORD."



5. The Password has been correctly entered.

opportunity to enter your Password again. If you do not have or do not know the correct Password you will be locked out of the program. The RW2 will not allow you to work without the Password.

When the processor has launched the program, the first screen will be the main menu. This is a six line menu, but the LCD Display only shows two lines. Use the double arrow keys to "scroll" down the menu.

The options are:

COPY
IDENTIFICATION
ENTERING CODE
ARCHIVE
TLM
OPTIONS

The COPY function allows you to begin the copy operation.

The IDENTIFICATION function will allow you to read the customer's key. It will identify; the "Manufacturer and Type" of transponder, and read the hexadecimal Transponder Code.

The ENTERING CODE option will open a screen, which will allow you to scroll through the supported manufacturers ORIGINAL TRANSPONDER types. The supported transponder types are:

MEGAMOS 13
PHILLIPS 33 - 73
PHILLIPS 53 - 93
TEMIC 11
TEMIC 12

Chose the correct manufacturer/type, and press the Enter key to open a screen that is appropriate to the type chosen. Different transponders have different formats for the code numbers.

The ARCHIVE option allows you to enter the files of archived transponder codes. The LCD Display shows "DISPLAY CODE POSITION 00." By entering a number between, 1 and 99, which represents the "address" of the code number desired, you can open and display the stored transponder code. The zeros in the prompt screen will change to represent the memory address. Press "Enter" to open the file. The RW2 will store up to 99 transponder codes.

The TLM option is used to access a piece of peripheral equipment not supplied with the RW2. The TLM device is used to program keys for the VAG transponder system. This is a European system. It is found on the Volkswagen, Audi, Seat (Spanish Fiat), Skoda, and a few others. The TLM plugs into the vehicle, and performs electronic programming functions to originate keys when none are present, delete lost keys from memory, and add keys to memory. I was told that the TLM is not available in the USA.

The OPTIONS function will open a scroll menu that shows these options.

LANGUAGE
CANC. CUST. ARCHIVE
KEYBOARD CHECK

The LANGUAGE option allows you to change the language option of LCD prompts. You can opt. for; ITALIANO (Italian), ENGLISH, FRANCAIS (French), DEUTCH (German), or ESPANOL (Spanish).

The CANC. CUST. ARCHIVE option will erase all customer archive files. If you Press "Enter," the screen will display; "CONFIRM CANCELLATION NO-ESC YES-ENT." Press "ESC" to exit this function, or press "ENT" to affirm the action and erase the customer files.

The KEYBOARD CHECK option allows you to test the keys of the touch pad. If you are having problems entering codes, you might want to test the numeric keys, to make sure they are operating properly.

We're making a copy of a Mazda transponder, but I'm not sure what type of transponder this vehicle uses. Let's read the key to find out what type of transponder you have, and see the code.

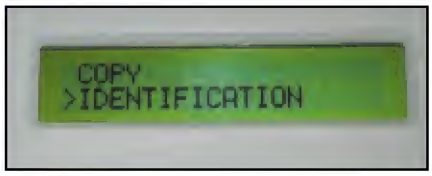
Place the cursor at IDENTIFICATION, as you see in *photograph 6,* and press the "ENT" key. The LCD Display, shown in *photograph 7,* prompts you to INSERT ORIGINAL KEY (and press)-RD.

In *photograph 8,* I have inserted the customer key into the Key Receptacle. This centers the head of the key in the read/write antenna. Because of the close proximity of other keys on a key ring, it would probably be a good idea to remove the customer's key from the ring. I would hate to reprogram all of the keys at one time.

Press "RD," to read the customer key, and the LCD Display changes to "READING IN PROGRESS," then to what you see in photograph 9.

3FF4ED78 3FE8A16F 33
C7FB410F 7D3BDE0F 00

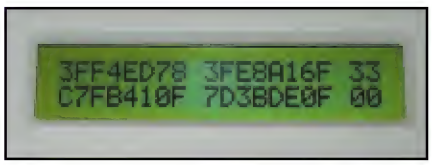
There are four eight-digit numbers. These represent the transponder code. The "33" at the right end of the top line



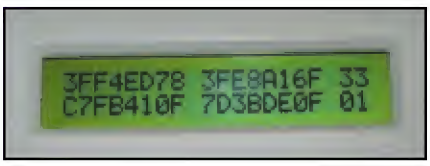
6. Place the cursor at IDENTIFICATION.

7. Display prompts you to INSERT ORIGINAL KEY (and press)-RD.

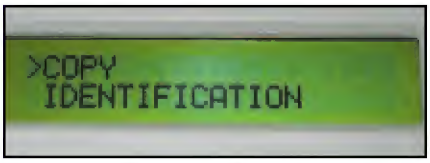
8. Insert the customer key into the Key Receptacle.



9. There are four eight-digit numbers. These represent the transponder code.



10. The transponder code, transponder type, and location in memory.



11. Scroll up or down to bring the cursor to the COPY function.

12. Insert the original key into the key receptacle, and press the Rd (Read) key.

identifies the transponder type. It is a Phillips (original or emulated) transponder. The RW2 will recognize and identify fourteen (14) different types of transponders. It will also identify, but not read or duplicate, CRYPTO transponders. CRYPTO transponders have a code that can not be copied. Do not try to copy CRYPTO coded transponder keys. The "00" at the right end of the bottom line represents the serial location of the file assigned to the code if the code is carried in the RW2 archive memory. As you can see, the code has not been archived.

If you press "ENT" at this point, the RW2 will file the Transponder code in a serial memory location. Press the "ENT" and the screen will change to "KEY MEMORIZED." When I checked the archive to see if the code was recorded, the display showed what you see in *photograph 10*. Notice that the code and transponder type are the same, but the archive address has changed to "01," to indicate the location of the transponder code in the RW2 memory. With this information you could "originate" a key for this auto, a week or a year from now, without having the original key. Up to 99 codes can be stored in the RW2 without the need for your PC. If you archive a large number of codes you will need the PC to keep track of them. This sounds like a dealer application for the RW2. If you simply copy the code information into a notebook, you could achieve the same result.

The RW2 will allow you to use the keypad to enter codes into the processor, for recording onto the key transponder chip. I can see this as an advantage for the locksmith. If the dealer or manufacturer will supply the transponder code over the phone, you will be able to program a key for your keyless customers without difficulty. This is where the RW2 really stands above the competition.

Now let's make a new key. Press "ESC" to return to the main menu. Scroll up or down, using the double arrows, to bring the cursor to the COPY function, as you see in *photograph 11*. Press ENT to enter the copy mode. The LCD Display changes to what you see in *photograph 12*. The Display reads "INSERT ORIGINAL KEY >RD." Insert the original key into the key receptacle, and press the Rd (Read) key. The display briefly shows "READING IN PROGRESS," then displays the prompt "REMOVE KEY," as you see in *photograph 13*. When the original key is removed, the display immediately changes to "INSERT BLANK KEY >WR." See *photograph 14*. Insert the blank key into the key receptacle and press the "Wr" key.

If the key is already programmed, the LCD will prompt you with "ALREADY PROGRAMMED OVERWRITE? >WR." (See *photograph 15*.) If you want to overwrite the transponder, the old code will be erased and the new code written in its place. Press Wr, to write the new transponder code over the inserted transponder blank.

If the new key is not programmed, the processor will begin to write our new transponder code to the key chip. The LCD Display will show "WRITING IN PROGRESS." When the key has been programmed, the processor will check the programming. The RW2 pulses the transponder to read the newly impressed code. If the code is returned correctly, the RW2 will indicate that programming was successful by displaying "OPERATION COMPLETED" on the LCD Display. If the key has a faulty transponder chip,

or there is no key in the key receptacle, the display "TRANSPONDER NOT DETECTED."

The "OPERATION COMPLETED" prompt will remain on the LCD screen for a few seconds, then change to "OTHER COPIES? NO>ESC YES>ENT," as you see in photograph 16. If you need to make other copies, press ENT to remain in the programming mode. If you only need one copy, you can exit the programming mode by pressing ESC.

Press the ESC key to exit the programming mode. The LCD Display will ask if you want to archive the code. The display will show "MEMORIZE CODES? NO>ESC YES>ENT." (*See photograph 17.*) If you press ENT, to enter the code into memory, the display will change, filling the screen with the transponder code, transponder type, and location in memory. This is the same screen that you see in *photograph 10.* Press ESC to exit the programming mode. The processor will return to the first programming screen, and ask you to insert the customer's original key. Press ESC again to return to the main menu. Turn off the power to complete the job.

With no experience, you should be able to clone/duplicate a transponder key in less than a minute. Just remember to read the operation manual before you begin. Carefully follow the screen prompts and follow the directions.

Jet ETD-1

The Jet ETD-1 (Electronic Transponder Duplicator-1) transponder decoder/duplicator shown in *photograph 18*, is a fine piece of equipment, designed to read transponders and impress the code onto a new transponder blank. The Jet ETD-1 does not have the same features as the RW-2, but it does represent a strong presence in the market.

A quick look at the front panel reveals four main features. They are; the LCD display, the key receptacle, and the green (read) and red (write) buttons.

The LCD display is used to communicate instructions to the operator, and display the transponder type being read.

The key receptacle houses the read write antenna. When a key is inserted into the ETD-1 receptacle, it will be centered in the antenna ring.

The red and green buttons control all functions of the ETD-1. The green "READ" button is pressed to query the transponder present in the key receptacle. The red "WRITE" button is pressed when you want to record the transponder information to a new unprogrammed transponder key blank.

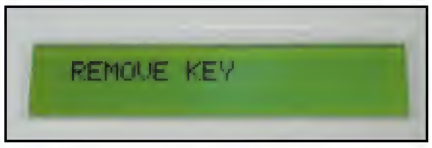
The rear of the device has access to the battery compartment, an auxiliary power jack, and the on/off switch. Space for an optional data port card is also found on the rear of the ETD-1.

The ETD-1 is powered by a standard 9-volt radio battery. This greatly simplifies maintenance. The unit can also be operated on standard 115VAC power by using the auxiliary power transformer, included with the ETD-1. Plug the auxiliary power transformer cord into the auxiliary power jack on the rear of the device.

The optional data port module supplies an RS232 connection for your PC. (*See photograph 19.*) With the optional port and software, you can record transponder codes to your PC, with additional information, such as codes, key cuts, customer names, and security codes. If you intend to program keys from a known transponder code, you will need a computer and ETD-1. The ETD-1 can not originate a transponder key without the computer link.

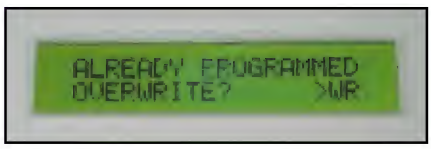
The ETD-1 is accompanied by a "Security Key," which must be used to initiate the unit. The "Security Key" is a red headed transponder key. (*See photograph 20.*) The transponder contains the "secret code" which allows the ETD-1 to initiate its programming mode. If you do not have the "Security Key," you will not be able to use the ETD-1.

ETD-1

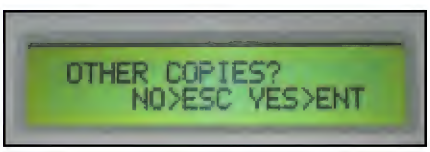


13. Display briefly shows "READING IN PROGRESS," then displays "REMOVE KEY."

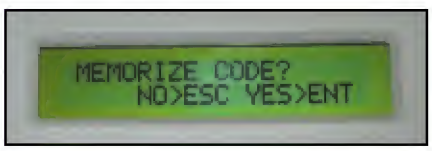
14. Insert the blank key into the key receptacle and press the "Wr" key.



15. If you want to overwrite the transponder, the old code will be erased.



16. If you need to make other copies, press ENT to remain in the programming mode.



17. The LCD Display will ask if you want to archive the code.

18. The Jet ETD-1 transponder decoder/duplicator.

Programming

Let's program a transponder key on the Jet ETD-1. First, insure that you have a fresh battery, or have plugged the auxiliary power transformer cord into the ETD-1. Turn the power on/off switch to the "on" position. The display will show the serial number of your ETD-1, and a portion of the security key code. The display will then read "INSERT SEC-KEY and press Read." If the security key is not inserted within 30 seconds of powering up the unit, the display will shut down and the unit will go into a battery save mode. Press the read key to reactivate the LCD display.

Insert the RED "Security key" into the key receptacle, and press the RED "read" button. The ETD-1 will interrogate the security key code. If the code is correct, the ETD-1 will initiate the programming mode. The LCD display will read "INSERT CAR KEY - PRESS READ." *(See photograph 21.)*

Insert the customer's key into the key receptacle, and press the RED "read" button. If the key has a defective transponder, or is not a transponder key, the LCD display will read "NON-TRANSPONDER." If the key has a transponder type that is not supported by the ETD-1 system, the display will read "CANNOT." The ETD-1 will not identify transponders that it does not support.

With the customers key in the key receptacle press the "read" button. The LCD display shows the make of the transponder. *(See photograph 22.)* The ETD-1 will identify; PHILLIPS, NOVA, TEMIC, and MEGAMOS transponders. The display will show "DEVICE MEGAMOS Read correct" (or PHILLIPS NOVA, or TEMIC). Press the "read" button a second time to see the transponder secret code. *(See photograph 23.)* The code will be displayed on the LCD screen. Again press the "read" button (third time). The display will read "INSERT NEW KEY AND PRESS "WRITE." *(See photograph 24.)*

Insert the unprogrammed transponder key into the key receptacle and press the RED "write" button. The ETD-1 will pause, then the LCD display will read "WRITING SUCCESSFUL." *(See photograph 25.)* When the key is removed from the ETD-1 you are ready to begin the process again. The LCD display will prompt you to "INSERT CAR KEY AND PRESS READ." If you are not going to program additional

keys, turn the power switch to the "off" position. If you forget to power down the unit, it will wait 30 seconds and go into a "sleep" or battery save mode. The display will go blank. Press the read key to "wake up" the display and begin the programming sequence again. The battery save mode is a very nice feature.

The transponder has been programmed, and the job is done. Programming the transponder will most likely take less time than duplicating the mechanical cuts from the customer's key.

19. The optional data port module supplies an RS232 connection for your PC.

You should be able to operate this unit with very little training, but read the instructions carefully before you begin.

Guard the RED "Security Key" from loss or damage. Use it only to power up the ETD-1. If you write to it, by pressing the RED "write" button while it is in the key receptacle, you will change its code and render it useless. Without the "Security Key," you will not be able to use the ETD-1.

Conclusion

Any of these transponder cloning/duplicating devices are easy to use, and ruggedly built. They offer the locksmith and key cutter the tools necessary to satisfy the needs of their customers.

Will it become the center of attraction in your shop, and generate a line of customers that will make you rich overnight? Probably not. Will it allow you to service those customers that come to you for transponder keys? Yes, but you must let your customers know you can duplicate their "Transponder Based Keys." I still have customers come to me that are surprised that we make VATS keys. They have been educated by the car dealers to believe that they have keys that can only be made by the dealer. Get a sign that tells your customers that you make keys for the new transponder equipped autos (advertise). List the cars you can service. Go to the car dealers and make them a key for one of their transponder vehicles (demonstrate). Put the transponder logo and a few words in your yellow page ad, or on your service vehicle (advertise). If you can't find customers, you have to run up a flag and beat your little drum. The customers will find you. Tell your "transponder story" to an editorial writer for the local newspaper (advertise free).

Nothing sells itself. Nothing will happen, until you make it happen. Transponders are a FACT. The need for "spare keys" supports most of us. The tools to generate those keys are changing. Without the tools you will be shut out of just "one more" portion of your business. Get the tools. Beat the drum. Do the work.

Say the Words - Get the Money

If life be the judge, then let me be judged by what I did, rather than what I did not. For, opportunity is met only for those that aspire. It would be sad, indeed, to reach the end of life's challenge, and be greeted with the words, "It was there for you."

For more information contact:

Curtis Industries Inc.
6140 Parkland Blvd.
Mayfield Heights, OH 44124
Phone: (800) 555-5397
Fax: 800-867-6020
Web: http://www.curtisindustries.com
Circle #288

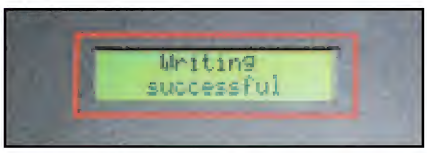
20. The "Security Key" is a red headed transponder key.

21. Insert the customer's key into the key receptacle, and press the RED "read" button.

22. The LCD display shows the make of the transponder.

23. Press the "read" button a second time to see the transponder secret code.

24. The display will read "INSERT NEW KEY AND PRESS "WRITE."



25. The LCD display will read "WRITING SUCCESSFUL."

ILCO Unican Corp./Silca
400 Jeffreys Rd.
Rocky Mount, NC 27804
Phone: (252) 446-3321
Fax: (252) 446-4702
E-mail: info@rm.ilcounican.com
Web: http://www.ilcounican.com

Jet Hardware Mfg., Corp.
800 Hinsdale St.
Brooklyn, NY 11207
Phone: (718) 257-9600
Fax: (718) 257-0973
Circle #289 TNL

The LAB Annex®

by **Sal Dulcamaro, CML**

Although LAB is probably best known for their precision replacement pin tumblers and pinning kits, they do make a variety of locksmith related tools. Their newest is quite impressive. Called the "Annex" this new tool from LAB is designed for servicing Best style (or small format) interchangeable cores. *(See photograph 1.)*

The Annex is sort of an all in one tool. It can be used as a capping block, and it is set up to securely unload the pin chambers of an I-Core for decoding. To the right of the fixture in photograph 1 is a Capping Tool (the short tool) and an Evictor Tool (long tool).

The Capping Tool is used for capping coded pin chambers, while the Evictor Tool is for dislodging and removing pins and springs in an already coded I-Core. The tool identified as the Evictor Tool is more commonly referred to (in the industry) as an "ejector" tool.

The part that holds the ejected pins and springs is called the "Code Book". It has been removed from the fixture in *photograph 2*. There is a ball detent on the bottom toward the back, in the vacated cavity where the Code Book was removed. It holds and helps position the Code Book when it is inserted into the fixture for decoding I-Cores.

The first demonstration covered will be the capping procedure, so the Code Book doesn't need to be in the Annex yet.

Loading and Capping I-Cores Using the Annex

Three main components make up the I-Core: the shell, sleeve and plug. Pin chamber holes run through all three, and the holes of each must be aligned with the others before one can load the pin chambers. To align the chambers in an uncoded I-Core, you must first make sure that the locking lug is fully extended. The locking lug is the part of the sleeve that holds the I-Core in the housing. The keyway of the plug should be vertical so all chambers are aligned.

Photograph 3, shows the I-Core being inserted into the Annex. The I-Core should be pushed inward all the way until it stops, as in *photograph 4*.

1. The Annex tool from LAB is designed for servicing Best style interchangeable cores.

2. The part that holds the ejected pins and springs is called the "Code Book".

3. The I-Core being inserted into the Annex.

4. The I-Core should be pushed inward all the way until it stops.

The Evictor Tool (in my hand) is designed for dislodging pins, but for the moment I will use it as an alignment tool (as suggested in the Annex instruction sheet).

In *photograph 5*, the Evictor Tool has been placed into the last chamber (closest to the front). This style I-Core normally has pin chambers and key cuts referenced tip to bow, instead of the more common bow to tip orientation. The Evictor Tool is long enough to extend into the small diameter ejector holes that are normally on the bottom surface of the I-Cores. With the pin chamber alignment secured, I can start loading pins in the first chamber, as seen in the photo.

The I-Core being used has seven pin chambers. You will probably find that I-Cores of this format will be typically made with six or seven chambers. A six chamber I-Core would have the second chamber from the back (or sixth chamber from the front) as its first chamber.

I don't normally do it, but the instruction sheet indicates that

5. The Evictor Tool has been placed into the last chamber.

6. With the first chamber loaded the Evictor Tool is removed.

individual chambers should be loaded, tested and then capped, before working on the next pin chamber. It seems like a good idea. That way you will know if any particular chamber was loaded wrong, as it happens. If a key doesn't work, you will know that the chamber just loaded is wrong, rather than a previously loaded chamber. If you load all the chambers at once, before testing the keys, you will have to check every chamber to find the error.

With the first chamber loaded the Evictor Tool is removed. *(See photograph 6.)* It is no longer needed for alignment once one chamber is filled. After a spring is loaded on top of the pin stack and the keys have been tested it is time to load a chamber cap and take out the Capping Tool.

The tip of the Capping Tool is in the first chamber. *(See photograph 7.)* At this point, it is resting on the individual chamber cap that has not yet been seated. Use a small plastic or rawhide hammer (mallet) to cap the chambers. A metal faced hammer could damage the tool while applying too much force. If the tool tilts while capping, the chamber cap might not seat properly and actually protrude slightly from the top of the I-Core. Hold the Capping Tool straight while tapping it with a hammer.

The completed first chamber will maintain alignment for the rest of the chambers. The remaining chambers should repeat the same process just completed. That is: load the pins and spring, test the keys, load the chamber cap and seat it with the Capping Tool. After all the chambers are filled, your I-Core should be ready to install in the proper housing.

Unloading an I-Core Using the Annex

One of the more valuable features of the Annex is its ability to effectively unload the pin chambers of an I-Core without losing the order of the pin stack. If you mix up the order of the pins, you will not be able to accurately decode an I-Core. The part called the Code Book is what holds the pins securely so that they can be measured later and decoded.

The Code Book must be placed back into the fixture, before you can load an I-Core for decoding. *Photograph 8*, shows the Annex with the Code Book reinstalled into the fixture. It loads from the front of the fixture and slides inward. When it goes most of the way in, it will begin to engage the ball detent. Continue pushing inward until you feel the ball detent engage a small recessed slot on the bottom of the Code Book. That will hold and align its chambers with the rest of the fixture.

When capping an I-Core, the tops of the pin chambers should face upward while it is in the fixture. The position of the I-Core must be reversed when decoding is done. Looking back at *photograph 8*, you can see that it is upside down. The ejector pin holes are pointing up and the chamber caps are pointing down. It is properly oriented to place into the fixture.

In *photograph 9*, I have already ejected the cap, spring and pins from the first chamber. The Evictor Tool is now inserted into the second pin chamber. It doesn't go all the way down because the pin stack is taking up part of the space. The tip of the Evictor Tool rests on the bottom tip of the bottom pin. The tool should be

7. The tip of the Capping Tool is in the first chamber.

8. The Annex with the Code Book reinstalled into the fixture.

9. I have already ejected the cap, spring and pins from the first chamber.

tapped down gently. Apply just enough force to disengage the chamber cap.

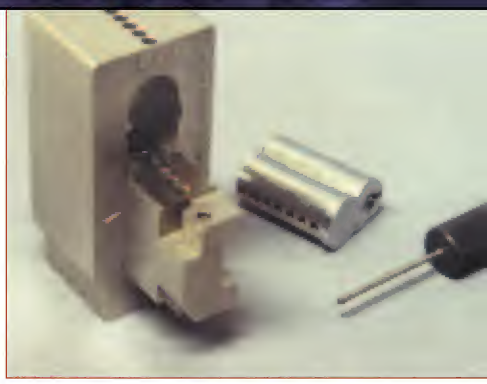
With the Evictor Tool all the way through, as in *photograph 10*, the contents of that pin chamber have been moved into the matched

10. The contents of that pin chamber now in the Code Book.

chamber position of the Code Book. You should continue emptying each chamber until all of the contents of the I-Core have been securely transferred into the Code Book.

Decoding the Contents of the Code Book

When the I-Core has been emptied, it should be removed from the fixture.



11. When the I-Core has been emptied, it should be removed from the fixture.

Once it is out, you can start to withdraw the Code Book, as in *photograph 11*. As long as you hold the Code Book together, you shouldn't lose or rearrange any pins.

I have the Code Book in my hand in *photograph 12*, and am holding it together to prevent anything from falling out. At the bottom there are two sets of consecutive numbers. Those numbers identify the pin chamber positions. With its tip to bow point of reference, a seven chamber I-Core uses every chamber in the Code Book. From left to right, it counts from 1 to 7. A six pin I-Core would not use the chamber at the very back end, so it

12. The Code Book in my hand holding it together to prevent anything from falling out.

13. The Code Book opened revealing all of the individual pin stacks.

skips that chamber position and counts from 1 to 6.

Never open the code book unless it is securely resting on a stable flat surface, or you may tip over the contents. *Photograph 13*, shows the Code Book opened and revealing all of the individual pin stacks. You can see the seven chambers of the I-Core directly in line with the numbered chambers of the Code Book.

To determine the control key cuts, you should measure and decode the value of the top pins from each of the pin chambers. Since everything is upside down in the picture, the top pins are actually at the bottom of the pin stacks (just above the springs). The chamber caps are at the very bottom (below the springs). If you don't have a chart handy that converts the measured length to the pin size, you can divide the measured height of the pin and divide it by .0125 inch (the increment for A-2 system pins).

For example, if the top pin height is .050 inch, dividing it by .0125 would equal 4. That would be a #4 size pin. You would then subtract that value from the number 13. Thirteen minus four equals nine. In that example the control key cut would be 9.

This method works only with A-2 systems when the pin stack total is the required value of 23. If the lock has been coded properly, 13 minus the top pin value will give you the control key cut value for that pin chamber. The master key cuts can be determined, but you would need a working change key for a particular I-Core for the process to be practical. I won't go through that process, but decoding the master key with an I-Core is virtually identical to the method you would use for standard lock cylinders. Determining a pin size by dividing by the increment will work with all the pins in the stack except for the bottom pins.

You should be able to buy the Annex from most suppliers that already carry LAB brand pin tumblers. If your supplier doesn't stock it, contact LAB at: 800/243-8242, or circle 280 on Rapid Reply. TNL

1998 Honda Odyssey

part 1

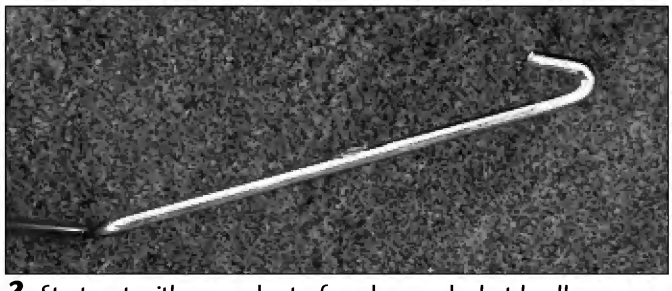
by Michael Hyde

The Odyssey is Honda's entrance into the popular and profitable minivan market. The Odyssey is also sold under the name Oasis for the Isuzu line.

Due to the length and number of photographs in this article, this will be broken into two parts. This month covering the ignition and doors and next month the hatch, glove box and programming procedures.

Opening

1. Opening the Odyssey is pretty simple, since Honda made a weak attempt at shielding the vertical linkage rod.



2. Start out with a good set of wedges and what I call a 'sideways gripping' tool.

3. The vertical linkage rod has a thin rubber sleeve to slow down the Slim-Jim. Grip the rod from the side and you will be pressing the rubber sleeve against the rod and then raise it up.

4. The ignition lock can be a real pain to get out. This van is equipped with a dealer only transponder system.

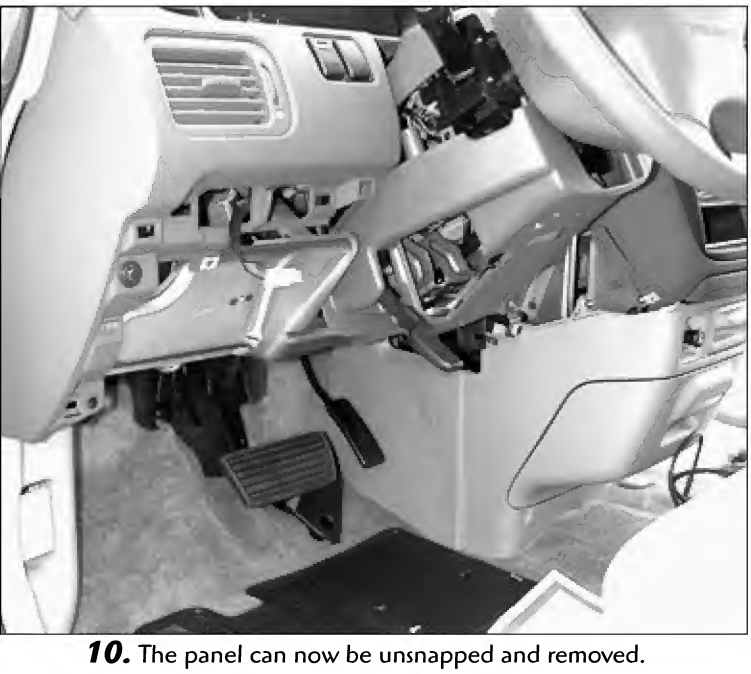
6. There are 6 Phillips-head screws to remove.

5. To remove the ignition lock you must first remove the plastic column shroud.

7. Once the screws are removed you can unsnap the plastic shroud. The shroud fits in the dash tightly and it may be necessary to remove the lower dash panel.

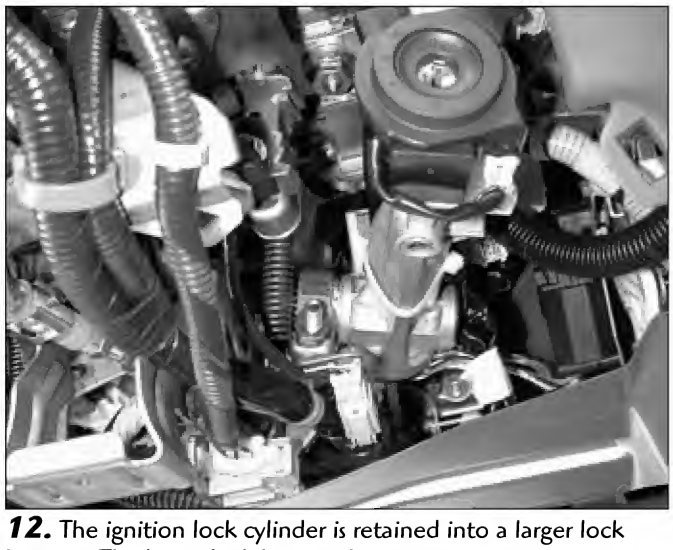
8. To remove the lower dash panel first remove the 2 Phillips-head screws on the right side.

9. Next remove the screw behind the small flip out compartment.

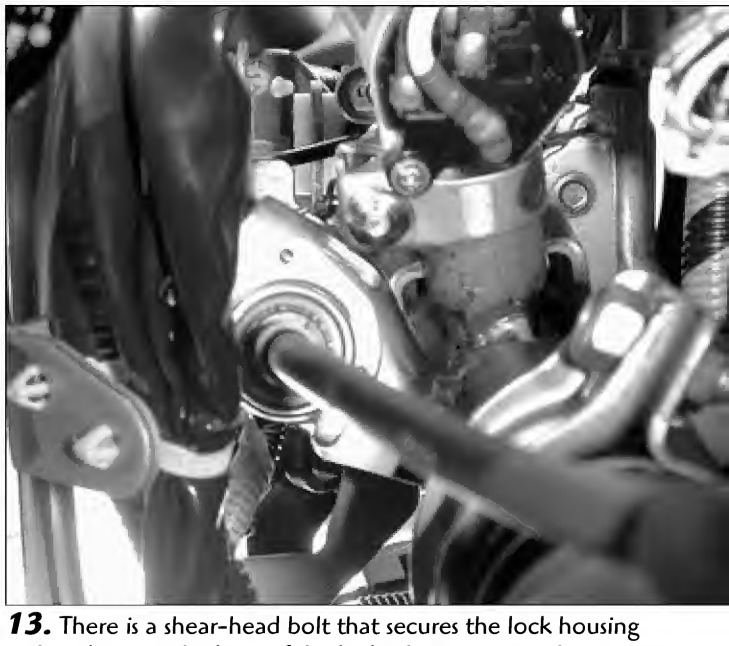


10. The panel can now be unsnapped and removed.

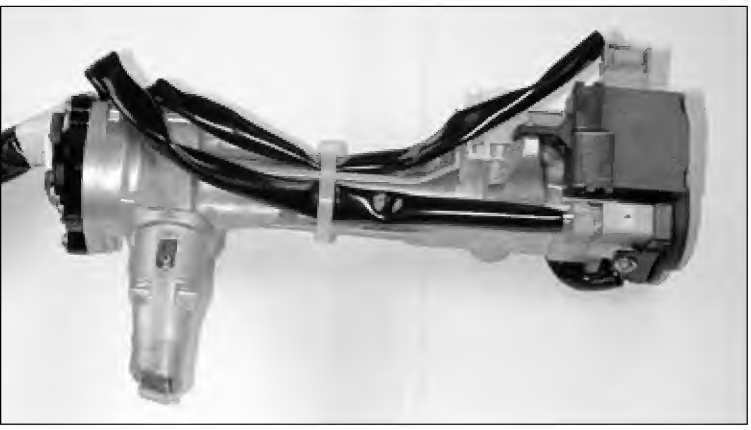
11. Once everything is removed, you have access to the ignition lock and housing.



12. The ignition lock cylinder is retained into a larger lock housing. The larger lock housing has an active retainer.



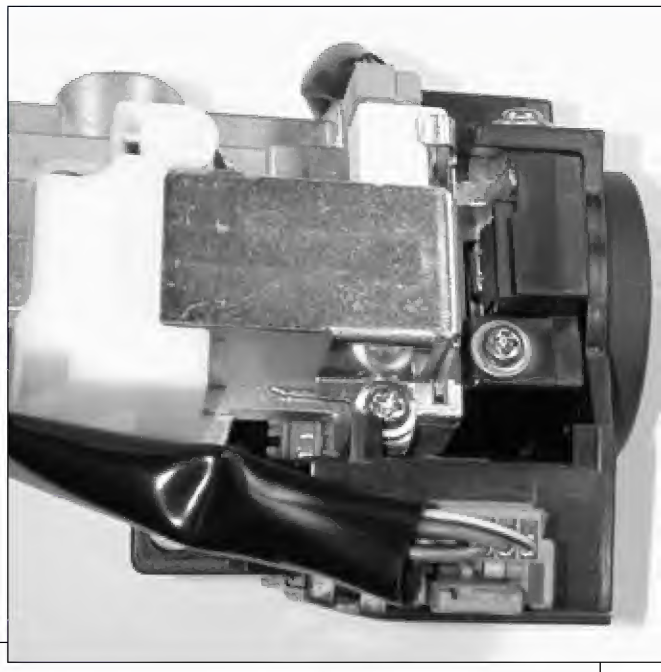
13. There is a shear-head bolt that secures the lock housing with a clamp at the base of the lock where it meets the column.

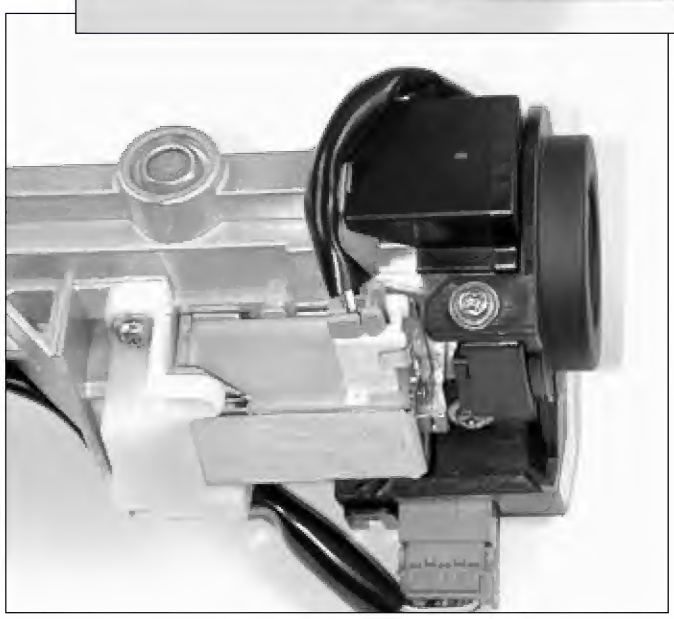


14. This is no small lock assembly.

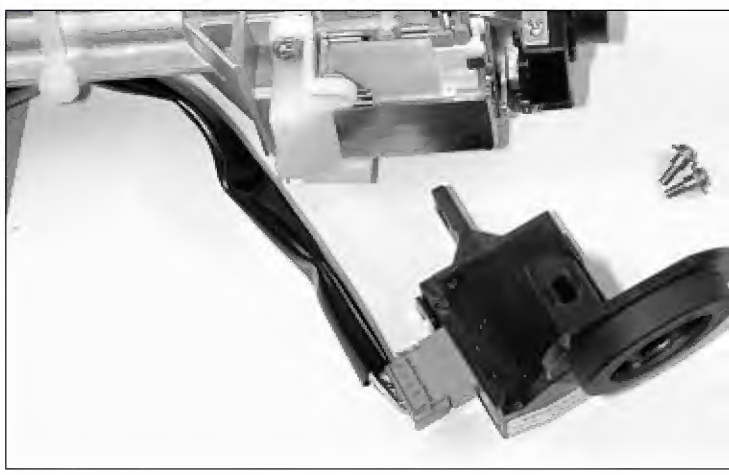
15. A view of the active retainer. The key must be turned to the ON position to depress the retainer.

16. The transponder induction coil (antenna) mounts to the face of the lock housing.



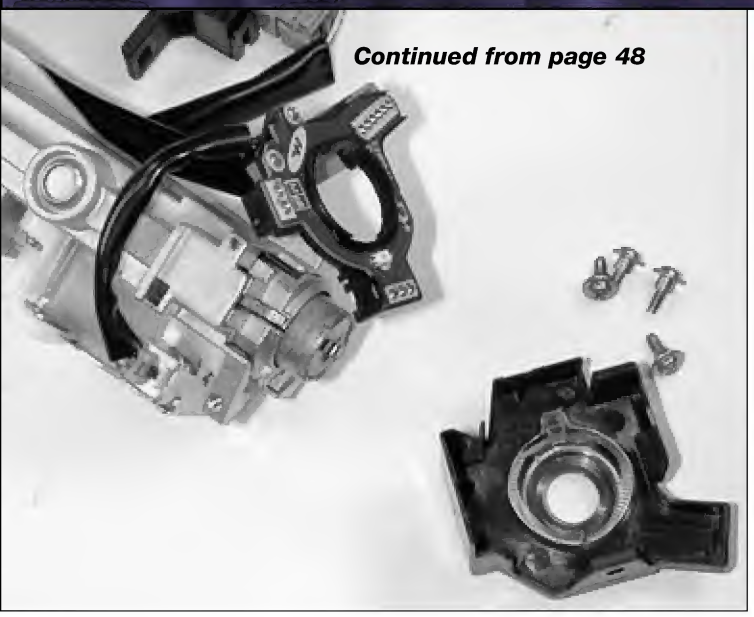


17. There is a Phillips-head screw on each side of the induction coil that must be removed.

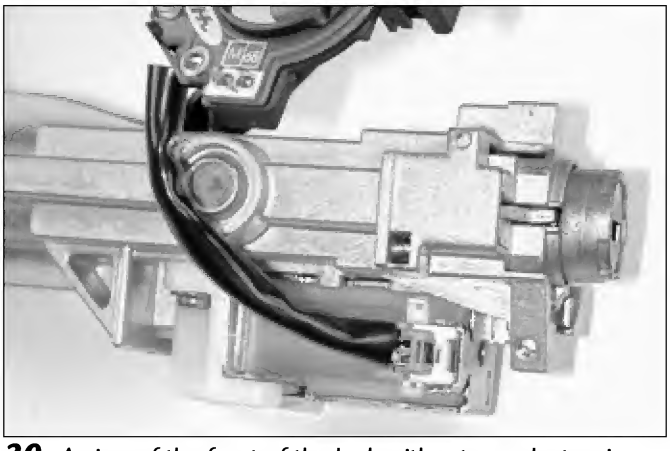


18. The induction coil can now be moved aside and disconnected from the wiring harness.

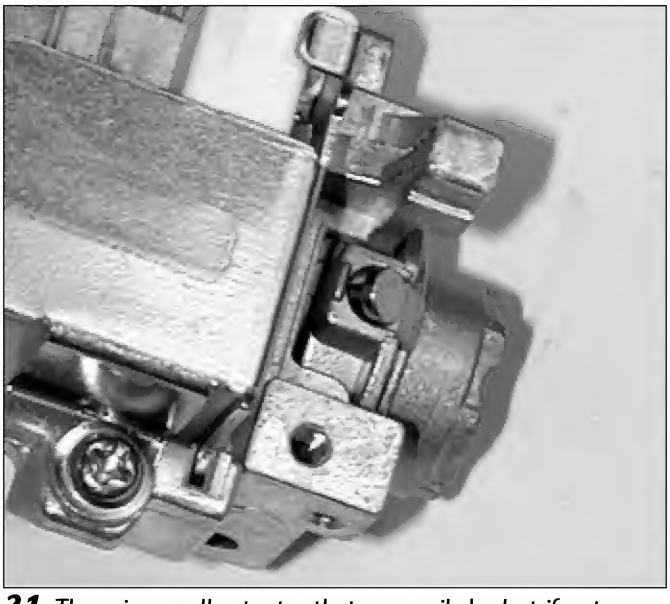
Continued from page 48



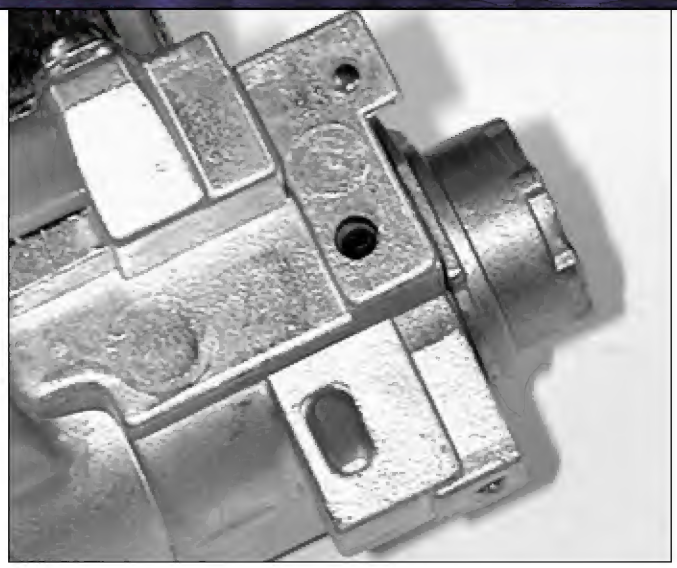
19. The illumination ring and adjacent electronics can now be removed and disconnected from the wiring harness. There are 2 Phillips-head screws.



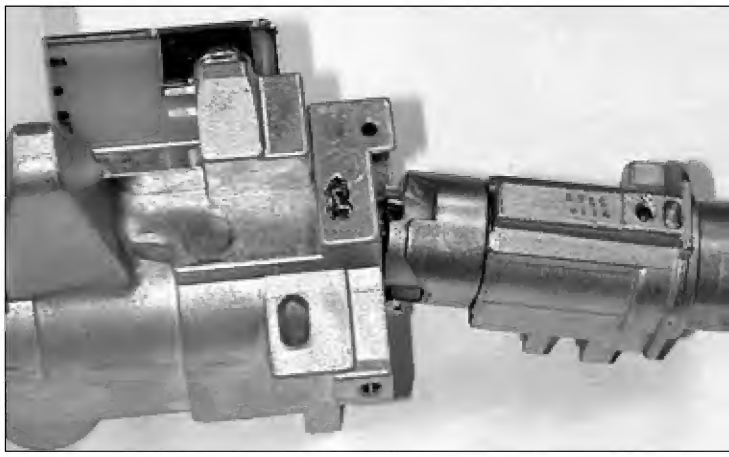
20. A view of the front of the lock without any electronic components.



21. There is a small actuator that can easily be lost if not removed for re-assembly later.

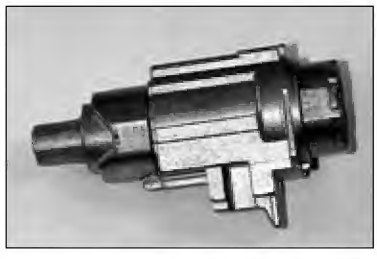


22. The next thing is to remove the roll pin holding the lock cylinder into the lock housing.

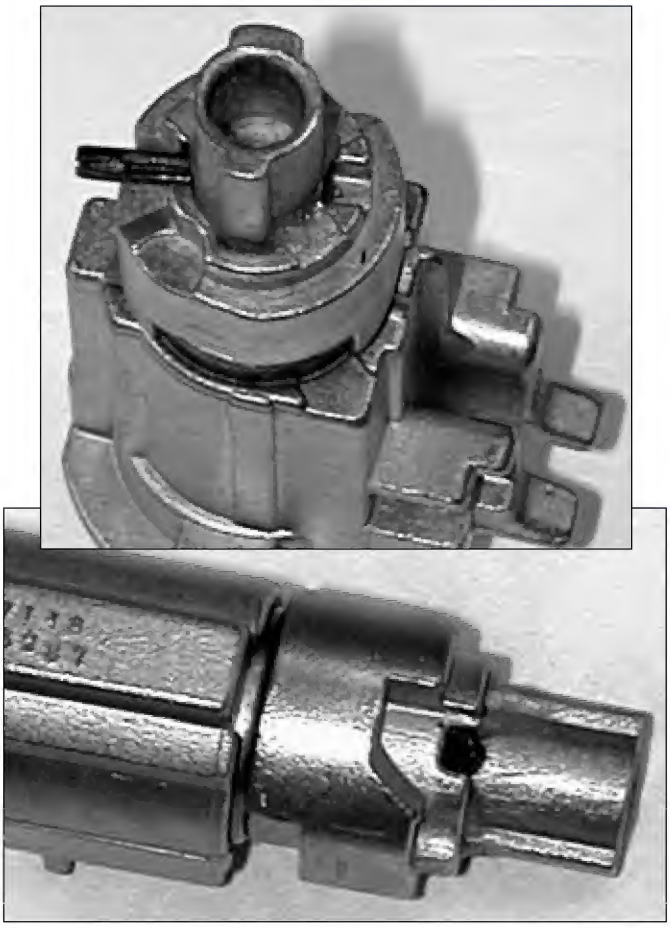


23. The cylinder will then slide out. There is an actuator lever that presses down on the cylinder, but will lift up far enough to get the cylinder in and out.

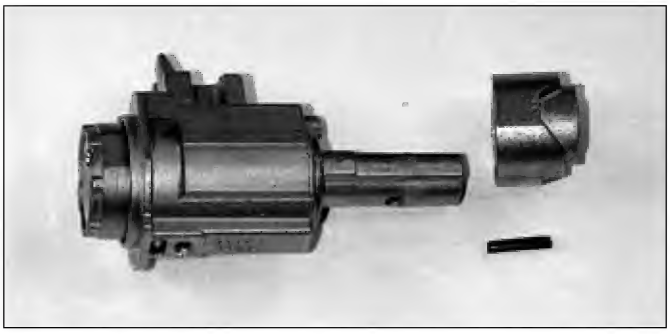
24. There is a code stamped on the lock cylinder. This is not a help since you have to do a lot of work to get the cylinder out.



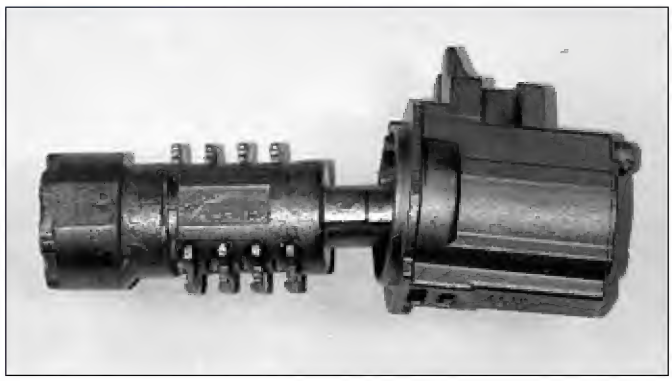
25. The lock cylinder removed from the lock housing.



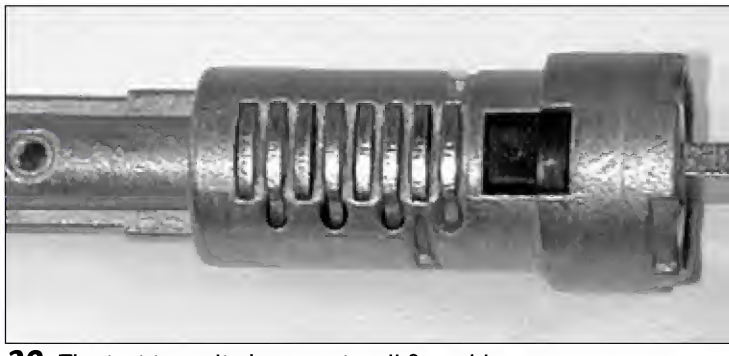
26. There is a tension roll pin that secures a cam on the rear of the cylinder plug. Use a pin punch to remove the roll pin.



27. Once the roll pin is removed slide the cam off the back of the lock.

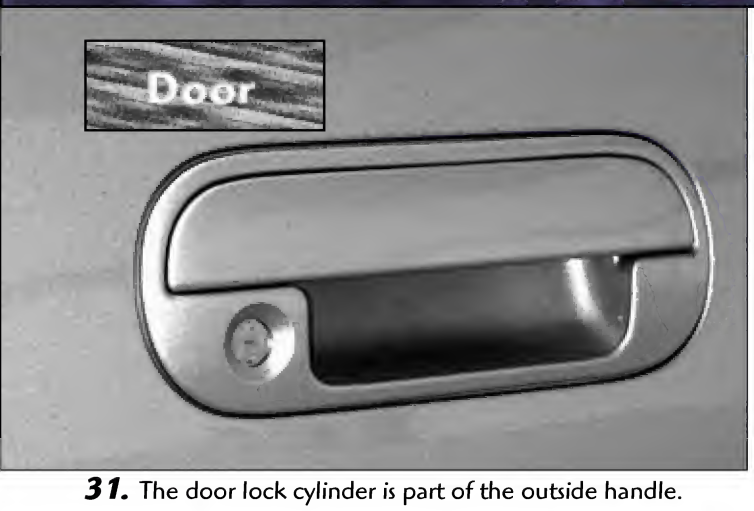


28. With the roll pin and cam removed you can slide the cylinder plug out.



29. The ignition cylinder contains all 8 tumblers.

30. A view of the ignition lock cylinder disassembled.



31. The door lock cylinder is part of the outside handle.

32. To service the door lock cylinder you will have to remove the inside door panel.

33. Remove the Phillips-head screws in the door pull cavities. There are plastic trim covers to hide them.

34. Remove the Phillips-head screw to the right of the speaker in the storage cavity.

35. Remove the Phillips-head screw on the inside door release trim.

36. Slide the unit forward to remove.

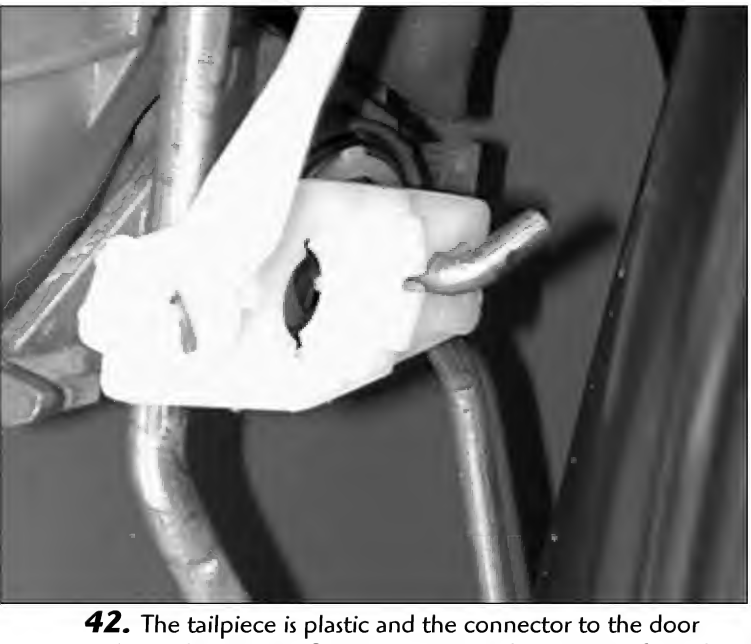
37. Next disconnect the linkage rod and disconnect the unit from the wiring harness.

38. The door panel can now be unsnapped and moved to the side. Don't forget to disconnect the wiring.

39. A view of the door and the weather barrier. Do not tear the weather barrier but instead lift it off the door gently.

40. There is just enough room to get the lock out.

41. The best way to remove the lock cylinder is to take off the C-clip and slide off the tailpiece.

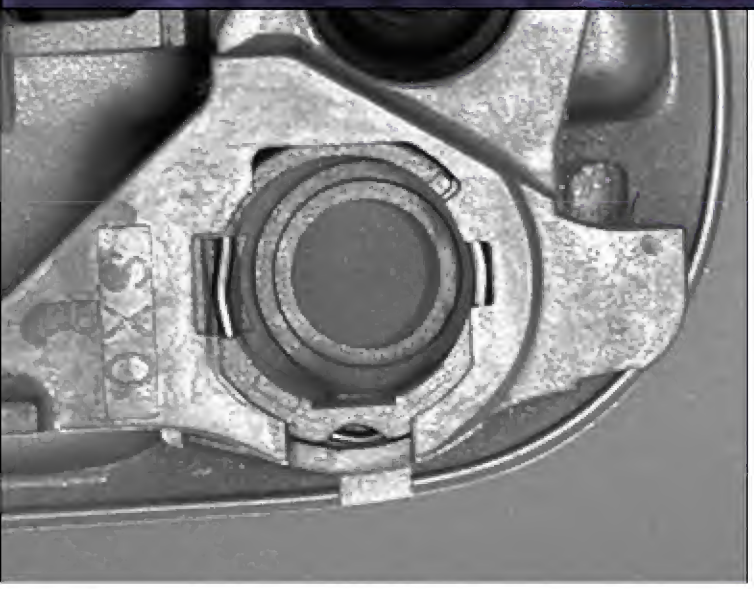


42. The tailpiece is plastic and the connector to the door lock switch is plastic. Once you remove the tailpiece from the lock cylinder it is much easier to remove the linkage rod and plastic door lock connector.

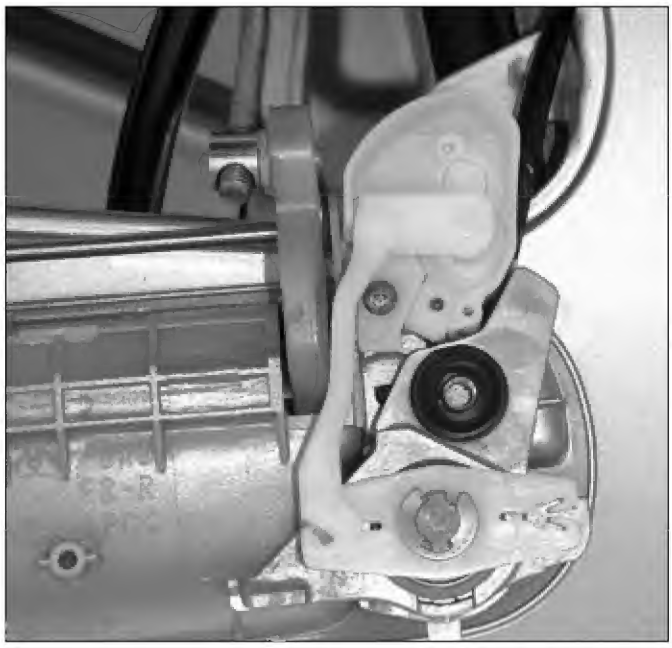
43. Remove the two 10mm bolts that hold on the outside door handle. You can now slide out the handle enough to gain access to the wire clip that holds on the cylinder to the handle. You must use a small flat blade screwdriver to get the clip out from around the lock cylinder.

44. A view of the outside handle.

45. This is the cylinder guard for the handle.

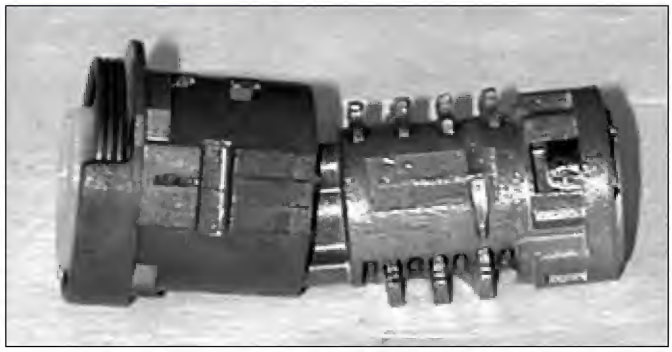


46. A view of the cylinder guard and the wire clip as it sits on the handle.



47. A view of the lock cylinder and handle assembly as it would be in the door.

48. The door lock cylinder removed. There is a code stamped on the side of the lock. The code is the bottom 4 numbers. The code series runs from 5001-8442 with no prefix.



49. The cylinder plug will slide out and is not warded.

50. The cylinder plug contains 7 tumblers in positions 1 through 7.

Next month we will cover the hatch and glove box lock as well as ignition programming procedures. TNL

PINNING KITS

There is an unbelievable number of pinning kits available to the locksmith. Everything from OEM single manufacturer pin kits to universal kits in every size and configuration possible. It would obviously not be possible to have a pin kit for every lock made, so choosing the pin kit(s) that will best serve your specific needs is critical.

Every pin kit manufacturer offers something different and there is something for everyone. To help narrow the search for the kit that will best suite your needs, the following manufacturers and suppliers or pinning kits are sure to have what you need.

ESP PINNING KITS

ESP Lock Products has an assortment of pinning kits from the classic wooden kit to the heavy-duty, leak proof metal universal kit to specialty kits.

The classic KK-80 anti-spill laminated wood pin kit features a Formica covered lid and sliding bottom drawer. Complete with a locking latch and extra deep compartments, the kit holds over a gross of pins and comes loaded with 40 different color-coded bottom pins and 39 various color-coded top and master pins.

A reference chart inside the kit's lid indicates what pin sizes are used by various lock manufacturers. Locksmiths can purchase pins only, the box only, or the loaded kit.

ESP Specialty Pin Kits are available to complete pin assortments for Kwikset, Schlage, I/C Core, Arrow, Sargent and Weiser.

HPC TUBULAR PIN KIT

The HPC Tubular Pin Kit (APS-077), contains 800 combination pins, 100 driver pins, 144 cylinder springs and 20 retainer pins, all .077" diameter. The included plug follower and depth key make this a complete re-keying kit when used with a tubular key machine such as HPC's Pocket Cut-Up or either of the HPC/Scotsman Tubular Key Machines.

The Tubular Pin Kit comes in a divided plastic box for easy use. The pin dimensions and the Ace and Fort pin designations are listed inside the box lid. Replacement pins and springs can be ordered through your Authorized HPC Distributor.

ILCO UNICAN 796-00-8X

The Ilco Unican 796-00-8X pin kit contains bottom pins from .160 to .0360 and top pins from .010 to .200 in increments of .005 There is a pull-out drawer on the side of the metal carrying case that provides storage for the included waffle tray as well as other cylinder tools.

The newly updated and revised data table on the inside of the lid provides current pinning parameters for two dozen of the most popular models of lock cylinders. It supplies key root depth information, bottom pin lengths, master pin sizes and top pin requirements to allow use of pins from this kit to closely match original lock manufacture's specifications.

CIRCLE NUMBER 283

CIRCLE NUMBER 284

CIRCLE NUMBER 285

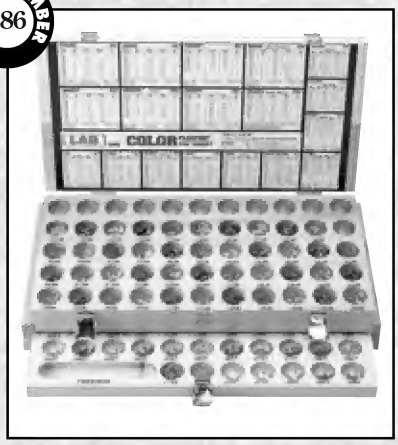
LAB WOODY CLASSIC

The Woody .003 and .005 kits from LAB are handcrafted in maple by New England wood craftsmen and are protected in a clear polyfinish to preserve their quality.

The Woody .003 kit has 104 sizes, with top/master pin sizes form .024 to .170 while the bottom sizes range from .165 to .360. The Woody .005 kit has 92 sizes with top/master pin sizes and top/master pin sizes from .010 to .250 and bottom sizes from .150 to .360.

Each kit feature larger printing under pin pockets and larger finger pin pockets than in prior models. Kits contain the Color Passport pin chart for positive identification on the job and have triple-latch case protection to prevent accidental spillage. The kits also have a slide-out center drawer with master pins, spring and a tool compartment.

CIRCLE NUMBER 286



LAB kits contain up-to-date, comprehensive pinning charts with annually updated technical data straight from the manufactures. AB's exclusive "eye saver" exploded view of information helps make pinning easy and accurate.

In addition to the Woody Kits, LAB offers theWedge Pro and Super Wedge kits, each of which can be mounted to the Pro Platform with Drawer, two versions of the Classic Pro solid metal kit, and the Dur-X Pro and Dur-X Semi Pro kits which are made of super tough polyethylene. The Dur-X Pro and Semi Pro are available in two models, both of which feature full pin size ranges and the Color Passport pin chart.

SEPTON KITS

CIRCLE NUMBER 287

Septon, Inc. has original pins in kits, which contain 100 each of all necessary pins and springs for particular brands. Kits are bright red with a draw pull catch and are available for Arrow, Best, Dexter, Falcon, Interchange, Corbin Cabinet, Chicago, Rockford, Master, Kwikset, Sargent, Schlage, Weiser and Yale. Over 124 gross of pins come in the 3/1000 kits, which contain an up-to-date pinning chart and sturdy eyelets for easy fastening and removal from the service vehicle.

There are more pinning kits available than you can imagine. They came in every conceivably size and configuration for any type of lock made. However, the possibility of carrying every kit made for every lock would be impossible. In choosing a pinning kit for standard pin tumbler locks alone, there are more choices of styles, sizes and configurations than you can believe. TNL

Safe Tools

by Dale Libby, CMS

This is the fun part of my job. It is the time where I get to test and try new tools and give a brief review, with some of my own thoughts and comments. Just because you own the best tools does not make you a good safecracker. Hard work, experience, and hundreds of hours of safecracking are the only way to gain the much needed education, seasoning, and training that make a great safecracker (CMS). In safecracking, experience is the only teacher... period!

If you have never ridden a bicycle before, just buying an expensive bike, reading all sorts of books on how to ride and repair bicycles, does not prepare you for the real experience of riding and balancing that is needed to keep from falling flat on your face. The same is true with safecracking. Practice, sweat, practice, and never give up. If it is man made, it can be man defeated. (I keep telling myself that over and over when I am working on a difficult job.) If the safe has good Karma, do the job. If there is any question that you are in over your head, call someone that can do the job.

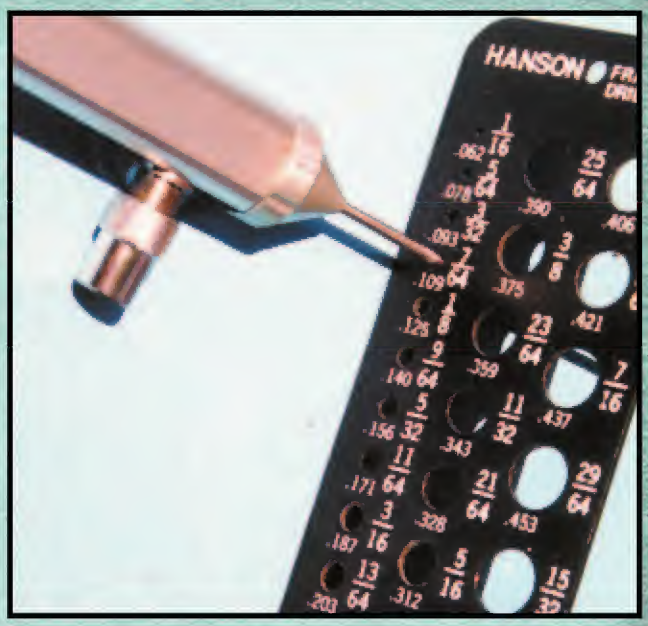
Power Thin Ultra View Borescope by Lockmasters

This borescope comes from Lockmasters in 10", 19", and 29" lengths, offering a straight view, and with the addition of a mirror tube, offers a 90-degree (right angle) view. This scope is small. With the mirror tube, it is about .090" in diameter. I placed the mirror tube on the scope and used a drill gauge. It fits into a 7/64" hole with some play. *(See photograph 1.)*

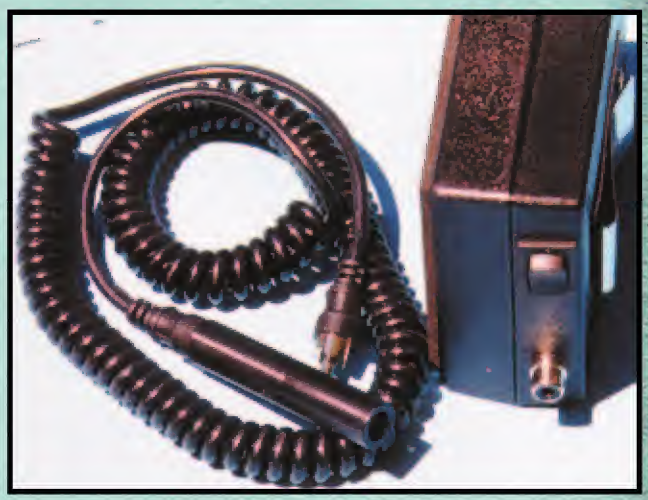
The view of this tiny scope (considering its small diameter) is phenomenal. The eyepiece is adjustable to bring the features in perfect focus. This scope does a big job for something so small. Forward view is clear, and the angle is also excellent.

A three "C" cell battery pack and a flexible light cord furnish the light. *(See photograph 2.)* There is a high intensity bulb at the base of the cord that plugs into the borescope with the standard adapter. This supplies a lot of light and is easy to use.

If you are going to do a lot of safe work, then the addition of a fiber optic cable and light source will be greatly appreciated. *Photograph 3* shows a good light source. The wide end of the cable goes into the unit and is secured with a thumbscrew. The scope end



1. The small size of scope and mirror is seen. Both are about .090" when assembled. Great for 8/32" holes.



2. Battery operated light source and flexible cable comes with the unit. On-Off switch is located near cable plug.

just plugs into the bottom of the scope as shown in *photograph 4.*

This arrangement lets you vary the source of light from a dim glow to too bright on the highest setting. The high light setting would be good for looking around in a large area for a relocker, but when inside of the lock, it is too bright and washes everything out.

Comments on the Power Thin Ultra View Borescope by Lockmasters

I like the scope and in fact used it to open three safes. After drilling a 1/4" hole through hardplate, the scope had lots of room to maneuver in the hole. Great for geared locks too.

For the money, this is a great thin micro type scope. It comes packaged in a cardboard box with foam inserts. If a good additional carrying case is available then I would suggest purchasing it.

My only criticism is regarding the fiber optic cable that fits into the light source. It is too short and NOT armored. Using a regular non-armored cable is dangerous. If the cable accidentally touches the end of a just used hardplate drill, it could be melted or sliced (burned) in half. End of cable.

I personally like to use an armored cable, again wrapped in rubber, but with a steel sheath underneath. It has the standard ends for both the scope and the light source, but is much thicker and more rugged than the non-armored type of cable.

I saw no real advantage to this small scope until I talked to Walt Martin in California. He uses this scope especially on safes that have a ball bearing matrix hardplate. When he encounters the matrix, he can drill between the ball bearings. Once he is through, he inserts the scope and reads the wheels. He leaves the hardplate intact and does not have to remove any bearings. That is a very good use for this scope that I did not think of myself.

3. Additional light source with intensity dial at bottom and optic cable plug above.

4. Optic cable plugged into borescope. This borescope has a focusing eyepiece for great viewing.

Emergency Dial by MBA

This is a cool tool that performs two functions. The first purpose is a sensible emergency dial that attaches easily with no drilling or hitting of a taper alignment pin. There are three holes with three Allen screws used to attach the emergency dial to the spindle. The Allen wrench is held in the center of the tool for storage.

This dial is used when you are faced with a burglarized combination lock dial that has not been broken off the spindle or a dial that has fallen off the spindle. There must be a part of the spindle protruding from the door surface to attach this dial. *(See photograph 5.)*

To use this emergency dial, first find the drop-in area of the lock (around 5-15 on S&G locks) and attach the dial to the end of the spindle with the three Allen screws accordingly. Dial the combination and add and subtract numbers accordingly until the unit opens.

The second diabolical use of this tool is to use it as a transferring tool. It works great. If you have to drill because the combination is lost or not working drill at the drop-in position with the emergency dial off. After drilling the lock with a view of the gates or lever end, or both, re-attach the emergency dial. There are viewing slots cut out of the dial that let you look into your hole while you are dialing the combination. *(See Photograph 6.)* You can see the dial attachment upper screw just under the number 80 on the dial.

These readings can be used to directly view and dial the gates at the drop-in position under the fence. If you drilled at another spot with no fence visible, then the tool can be used as an excellent transferring tool.

Comments on the Emergency Dial by MBA

This tool is great. It has more uses that just an emergency dial. It is a transferring tool as well. The directions that come with the tool are exquisite and admirable. It tells how to transfer readings from one spot easily to another part of the dial ring, and eventually to the drop-in position.

5. Spindle protruding from dial ring.

6. Installed emergency dial showing mounting screw through milled slot at #80. Allen wrench is held on dial through special hole.

The directions are clear, succinct, brief and to the point. This tool, the MB01 is available from (Mark Bates Associates (MBA) A good tool does not necessarily have to be expensive. It is innovative and affordable. I recommend it to ALL safecrackers, from novice to expert. It is a simple conscientious tool.

The only thing I did to the tool, when I used it for the first time, was to run a 5/16" drill through the center of the fixture. It fit a little too tightly on the exposed spindle to begin with. Pushing too hard on the spindle when attaching the tool might set off a relocking trigger or device. Ease of installation and removal of the tool is important. If you have to open up the bore, make sure the setscrews do not interfere with the drill bit.

Norm's Safe Tools by H.P.C. (NST-6)

I have owned a set of the Norm Safe Tools for about 15 years. They come in an orange carrying pouch. Norm Schamp who is a safeman in California developed them. I have used these tools many times. At times, I even used them for what they were intended for. *(See Photograph 7.)*

These tools are designed for use after an attempted burglary. Specific tools are needed for specific locks. The first tool is inserted into the spindle hole and is used to align the wheel pack to the opening position. Then a specific relock defeat tool is inserted, the relocker pushed, pulled, or depressed. The wheel pack (except on Mosler) is then turned, and the lock will open.

With Mosler, the wheel pack is not present if it has been punched, for it is attached to the back plate of the lock. A special tool is then used to pull the Mosler Lever to pull the bolt back.

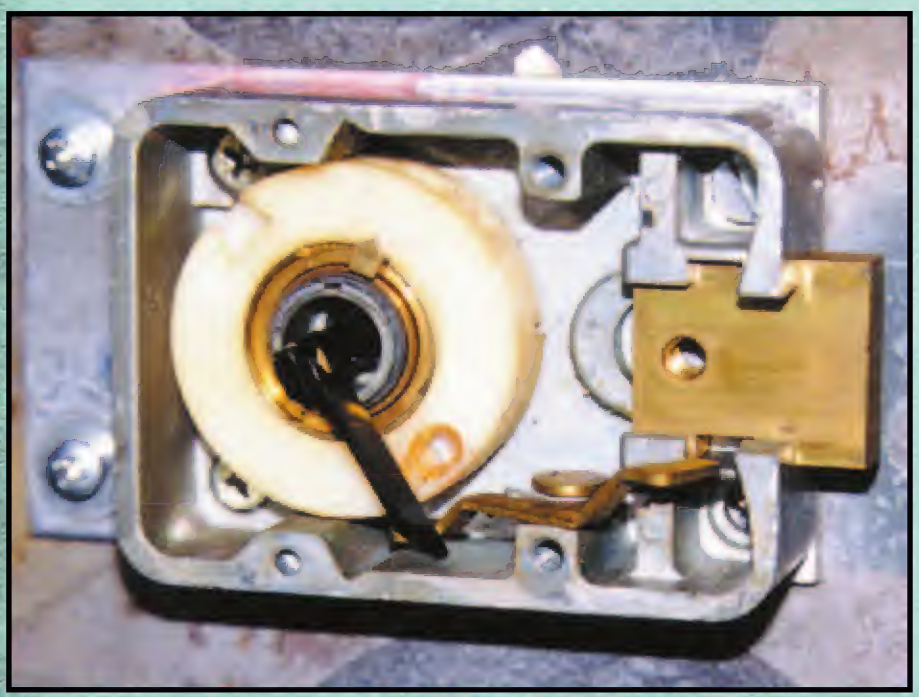
The tools have hinged ends that fall open in the safe after inserting. To remove the tool, the safe door must be open, and they are removed from the inside. This is especially true for the wheel alignment tool. Simple to use, they take minimal practice to master their simple but effective tasks.

Comments on the Norm's Safe Tools by HPC

These tools work, but the actual application is only a part of the opening. The wheel alignment tool can be used in a variety of ways. On Sentry safes that have a removable dial, just remove the dial, punch the spindle into the safe (fully), insert the tool, align the wheels and the safe is open.

To repair the safe, just reattach the dial to the spindle and reassemble. The problem comes when the spindle has not been punched fully into the safe door. This can be due to a back plate of the door which covers the lock has not been moved enough to let the spindle fall out of the way. If for some reason you cannot get the spindle out of the way, then you cannot use any of the Norm Tools.

7. Norm's Tools in folding plastic pouch.



8. S&G tool shown pulling relocker on S&G lock with plastic wheels. Tool is automatic. Insert and pull.

In *photograph 8,* we can clearly see the S&G relock tool inserted in the spindle hole and pulling the relock up and out of the way. (No lever in this picture.)

As with most HPC products, the directions have been refined over the years, which is to say they are well written and illustrated explicitly with clear picture and procedures.

A secondary problem is when a spindle is punched on a better safe or chest and secondary relock devices (outside of the combination lock body) are activated. Moving the combination lock bolt is not enough sometimes to get the safe open. Other measures must be used to deactivate or destroy these pesky relockers.

Everyone should own a set of Norm Tools (Norm Safe Tools) These tools are worth the price for deactivating relockers in the combination lock proper. They work and will save you drilling multiple holes to accomplish the same thing.

Warning! Do not just punch any safe and try to use these fine tools. There are many factors, besides relockers that hamper punching. The cover plate on the back of the safe door is a hard obstacle to overcome by punching alone. You must be able to punch the entire spindle into the safe or these tools will not work.

Nose and Door Puller Kit by Timemasters

This compact kit contains all the essential elements to open most safe deposit locks. Each component is designed to perform a specific task. When used correctly, these tools will last a lifetime with minimum care or service.

The entire kit comes packaged in a zipper bag with inner compartments to hold the little pieces. The door puller part of the tool also fits nicely in the same bag. The enclosed directions for using the tool are succinct and specific. With the help of the exploded view contained in the directions you will have no problem using the tool correctly.

I cheated on this tool. I called the

owner of Timemasters (Dan Graffeo) and interviewed him about this tool and other things in the works. The first thing that one notices about this tool is that it is made of a plastic type substance.

The puller bar and puller bolts are metal, of course, as well as the screw and driver bit attachment. I asked him why the body was of 33% glass and nylon. Dan stated that after talking to many field technicians who did a lot of safe deposit work, they asked if he could make the unit lighter. They felt the weight when they were opening boxes near the top of the stack and had to hold the tool overhead. Nose pulling is rather straight forward. We have all done it. The directions detail how to do it, and a couple of maneuvers that are necessary to make pulling the doors easy and efficient. The kit also contains parts for pulling doors open if the lock cannot be opened any other way.

9. The Timemasters door and nose puller kit.

The easiest way to describe the TMI door and nose pulling kit is to look at *photograph 9*. I did not get a chance to use it on a real safe deposit door, but I will and I will then show the proper way to use this kit. Until then, bear with me as I talk it through.

From left to right there is a bag of accessory screws and a couple of extra door pulling hooks along side an Allen wrench. Below this is a large door pad. This is used when pulling a door after removing the plug of the safe deposit lock. This spacer is made of plastic and protects the door being pulled open.

Next is the door puller bar and the concave top plug below it. One side of the plug has a raised portion on it that

10. The new Mini-Rig with four basic templates and dial puller system.

fits precisely in the door puller bar. This black nylon plastic washer must be used when pulling doors. It keeps everything in alignment.

There are also two large white plastic plugs, which fit under the two jack bolts, which are just to the right of the puller bar. The plastic washers are used to spread out the force of the jack bolts so that hollow doors will not be dimpled or mutilated.

The jack bolts have a hex end that the included Allen wrench fits. The end of the jack bolts are interesting. They are plastic coated swivels. This accommodates the change in angle as the door is pulled. Quite ingenious and diabolical.

Next in line is the nose puller with knurled nut and stainless steel (strong) screw. There is also a hex nut built into the tool for those really tough pulls. Last, but not least is the door puller attaching bolt, It is rather ingenious.

After pulling the nose of the door you wish to pull, you insert this tool and tighten the bar. This causes the two hooks to come apart, ready to grip the inside of the door or lock. If the lock levers interfere, just bend them apart with a screwdriver and hammer. One of the hooks should be facing the direction of the safe deposit lock bolt.

After tightening the hooks, put the door pad over the bolt, the puller rail, the large radiuses black nylon washer with the radius down, and the top wheel with holes in it. Takes longer to write about it than to do it.

Move the unit until one of the jack bolts in on an adjoining door and crank it up with the Allen wrench. Special directions are given for opening doors where there is no immediate adjacent door to pull against.

Comments on the Nose and Door Puller Kit by Timemasters

I like this tool and will use it on a job and put it through its paces. It feels light, but with the special polycarbonate and glass construction, it is a strong (if not stronger) that the all metal version of the same tool, and half again as light.

The Mini-Rig by Strong Arm

Bob and Jeff Volosing make the Strong Arm Mini-Rig safe drilling fixture and supply fine carbide drills for penetrating hard plate. The newest version of the Mini-Rig has a larger drill bolt, dual chip wipers, and a new fastening system. *(See photograph 10.)*

The kit also has a dial slam puller and a spindle forcing attachment for Mosler and other locks. This is a complete safe opening system.

Up and coming are two additional tools. *(See photograph 11.)* The template on the left is for floor safes. The template attaches to the bale or handle holes on Star, Major, and other floor safe round heads. The hollow bore bolt can be placed in three different areas for the preferred attack sequence.

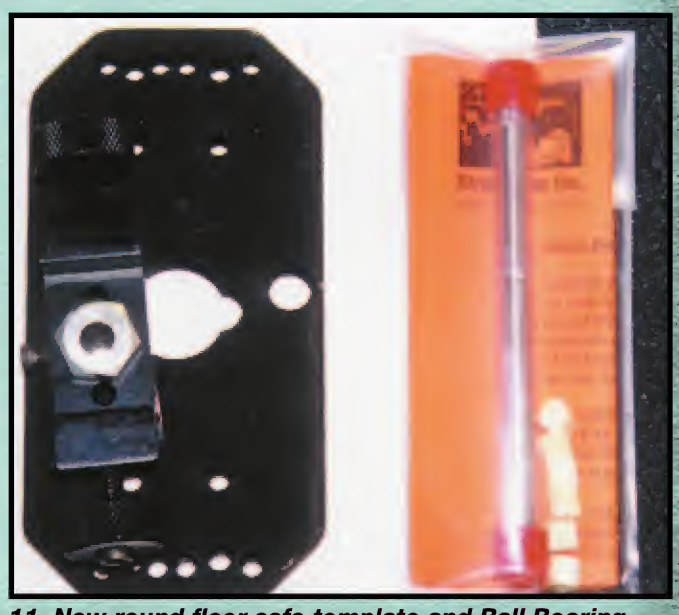
Next to the floor safe template is a Ball Bearing Burr, used when encountering a ball bearing matrix hard plate. It does work.

I like how the new unit attaches templates to the safe door, so let us go quickly through the new ways it works.

Photograph 12, shows how the standard template is attached to the door. There are cap screws at 12 and 6 o'clock that fit the dial mounting screws. For S&G and other locks, the screw nearest the "A" point have been ground down as to not interfere with the hardplate drill.

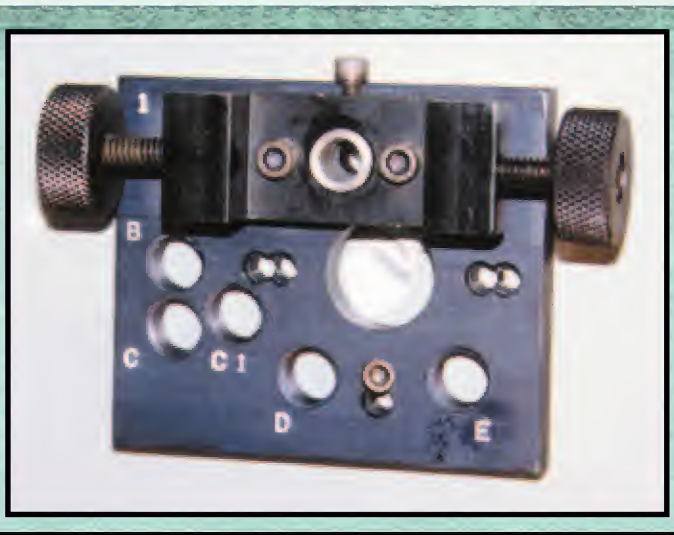
Once the template is attached to the door, the drill guide is attached to the door using two larger cap screws. *(See photograph 13.)* Note the replaceable bearing between the screws. This keeps the drill going in straight and protects the drill guide. There are three hardened inserts included with the kit to handle most popular hard plate drill sizes. The knurled nuts at the end of the fixture dos not come off and roll under the safe in this newer version.

Look closely at point "E" on the template. There is a large 1/2" threaded hole there, but how do we attach the drill guide at that point? Here is where this new system excels.



11. New round floor safe template and Ball Bearing Buster kit.

12. Basic template for S&G locks. "A" is the drop in position for a horizontal left mounted lock.



13. Drill base attaches with two hardened cap screws. Note removable bearing between screws.

The Strong Arm kit incorporates the "Hollow Bore" bolts. These are 1/2" hardened bolts with either a 1/4" or 5/16" hole in them. They fit nicely to the fixture and thread up evenly with the bottom of the template.

Photograph 14, shows the drill holder attached to point "E" with the 1/4" hollow bore bolt.

The extra nice part of this system is that the hollow bore bolts can be mounted anywhere on the safe, the door, the sides, or even the top of the safe. This is accomplished by using the drills included within the kit, and the 1/2" tap. Just drill and tap a hole wherever, tap the hole and attach the drill guide fixture to the door with the hollow bore bolt. It is much faster and simpler.

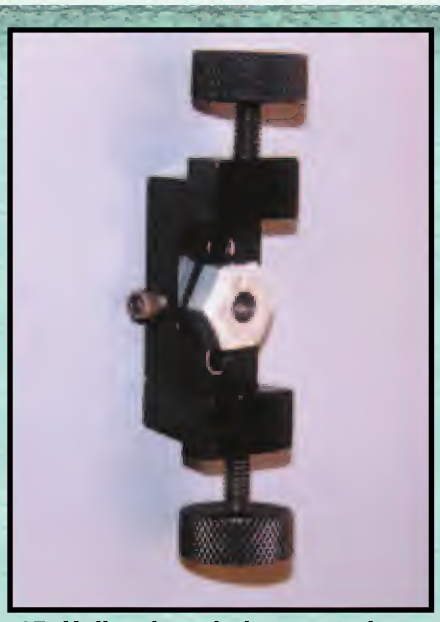
Photograph 15, shows the drill guide attached to the door. Now it is possible to drill from the side of the safe with the hollow bore bolt. This is important for pinpoint accuracy and drilling through exotic barrier materials that may be used in the sides of newer X6 type safes.

Another new improvement is the addition of a ruler or scale on the leg of the drill fixture. This lets you measure your progress as you penetrate the hardplate. *(See photograph 16.)*

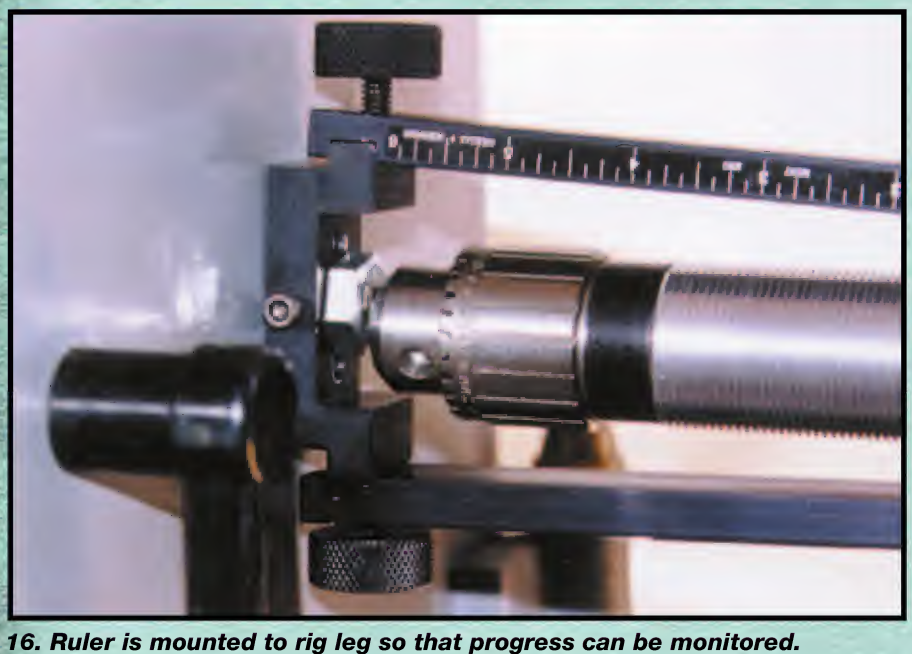
Comments on the Mini-Rig by Strong Arm

In my opinion, the Strong Arm Mini-Rig drilling system is the best all around fixed drill rig system going. Fixed rig means attached to the safe. Coming up from Strong Arm is a vacuum fixture to hold the rig to the door.

14. Drill base mounted with 1/2" hardened hollow bore bolt at point "E" of template.



15. Hollow bore bolt mounted directly to door with drill base. Knurled knobs do not come off.



16. Ruler is mounted to rig leg so that progress can be monitored.

StrongArm promised they would "not" improve the rig again, so I bought the one featured in this article. You will see it on a real safe soon, especially for side drilling.

Repairing a hollow bore hole is simple. Just run a 1/2" bolt into the hole until is seizes up and cut it off. I use hardened bolts to keep others from drilling. Also, an application of Lok-Tite makes the plug almost un-removable.

Safebuster Lever Rig from Keedex

A good safecracker will have two drill rigs in his arsenal. One will be a lever rig, and the other will be a fixed rig, like the Strong Arm unit just discussed. Which is better? Depends on the situation. I believe the first drill rig you should buy is a lever rig. It will do everything that a fixed rig will do, but it loses something in the accuracy, but gains it in the versatility.

Most other rigs I have used were made for a specific drill. My Lee rig uses a Bosch Hornet drill motor, which is no longer manufactured. Since the motor is enclosed in the rig body, no other drill will work in this application. After my Hornet dies, my drill rig dies, unless I buy a new attachment for a more modern drill.

Stepping into the arena is the Keedex Safebuster Drill Rig. The beauty of this tool is that the basic collar will fit over 12 models of drill motors, plus there is an additional ring made for Milwaukee drill motors. This means that the rig will never be outdated and can be used with many different drills. This is only one of many innovative features.

Other lever rigs have the drill encased in a formed body, which makes the drill hard, and awkward to use when you are not drilling hardplate. The Keedex rig has 2 quick release pins that free the drill from the drill rig. This allows the immediate use of the drill for other locksmithing jobs and assignments.

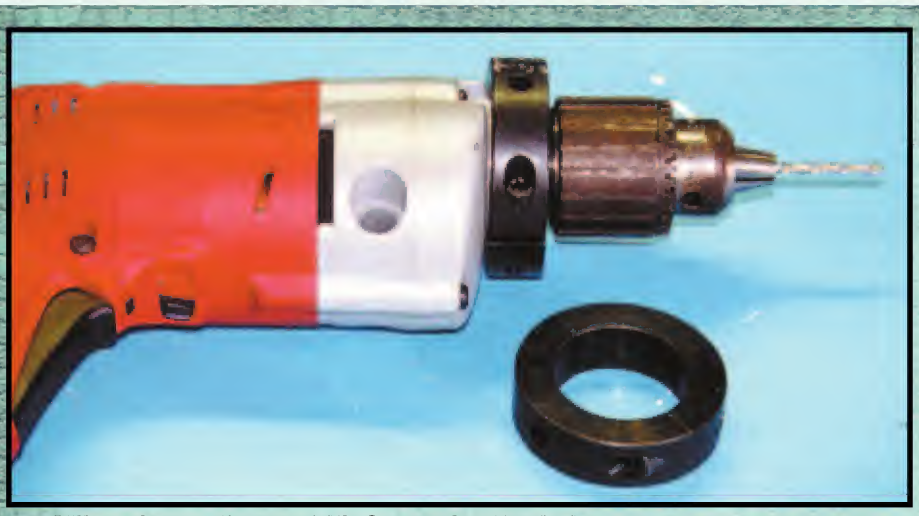
Set up for a drill is easy. *Photograph 17,* shows my Milwaukee drill motor with the collar installed. Below it is the standard, slightly smaller, collar. The collar is attached with two Allen cap screws.

The drill can be attached to the wide part of the rig with two quick release pins. There are 3 holes to grip the drill in different places for angular positioning. *(See photograph 18.)* The end of the rig has five holes in it for the placement of the chain. This chain attaches to the safe via the safe handle, usually.

By being careful, the rig will not break the safe handle. 35 pounds of pressure on the end of the handle will produce 500 pounds of pressure at the point of the drill bit. This will make short work of most hardplates. Technique is important. It has taken me about 25 years to develop good hardplate procedures. These must be learned by hard work and years of practice. *(See photograph 19.)*

If for some reason, the handle is broken off, I drill and tap either a 1/4" x 20 or 5/16" x 18 hole and thread an eye bolt in. I attach the end of the chain to this fixture. Repair is easy. Just grind off the bolt at the surface of the door and paint. Repair is invisible.

In *photograph 20,* I am trying to show that the drill motor and the chain should



17. Milwaukee collar on drill. General collar below.

be parallel. This is important to drilling hardplate. It is easier to control the penetration of the drill bit. The quick release pins can also be seen in the photo.

Comments on the Safebuster Drill Rig by Keedex

The Keedex Safebuster Drill Rig is an economical way to start your safecracking tool collection. It is versatile and sells for about $200.00. Included are four Keedex Hardplate drill bits. I like the ability to use multiple drill motors.

For more information on any of the products presented contact:

Lockmasters, Inc.
5085 Danville Rd.
Nicholasville, KY 40356
Phone: 800-654-0637
Fax: (606) 885-7093
Circle #268
E-mail: salesinfo@lockmasters.com

MBA
101 Edgewood Plaza Dr.
Nicholasville, KY 40356
Phone: 888-622-5495

18. Quick release pins, one on each side. There are three positions to attach drill, depending on angle needed.

19. Drill rig with chain and spacer holes at end of rig.

20. Rig in drilling position. Drill bit and attaching chain should be parallel.

Fax: (606) 887-9491
Circle #269
E-mail: mbatools@aol.com
Web: http://www.mbausa.com

HPC, Inc.
3999 N. 25th Ave
Schiller Park, IL 60176
Phone: 800-323-3295
Fax: (847) 671-6343
Circle # 270
E-mail: hpc@hpc.world.com
Web: http://www.hpcworld.com

Timemaster, Inc.
127 SE 29th St
Topeka, KS 66605
Phone: 888-798-8465
Fax: 800-798-TIME
Circle #271
E-mail: timstr@aol.com
Web: http://www.time-master.com

Strong Arm, Inc.
2228 Kenry Way
S. San Francisco, CA 94080
Phone: 800-710-8168
Fax: (650) 794-0541
Circle #272
E-mail: JVDrills@sol.com

Keedex, Inc.
12931 Shackelford Lane
Garden Grove, CA 92841
Phone: (714) 636-5657
Fax: (714) 636-5680
Circle #273
E-mail: info@keedex.com
Web: http://www.keedex.com

Open, buy tools, make your jobs easier, and prosper! TNL

BEGINNER'S CORNER

The New Mul-T-Lock IC Lock and Padlock

by
Jim
Langston

1. The Mul-T-Lock IC lock and keys.

2. The IC lock as it is being taken out of the lock housing.

Mul-T-Lock has a new interchangeable core lock adding to the ever-growing Mul-T-Lock product line. This new IC lock is very simple to service. The design of the Mul-T-Lock IC lock is modeled after the Schlage IC lock, and works basically the same.

Photograph 1, shows the Mul-T-Lock IC lock and keys.

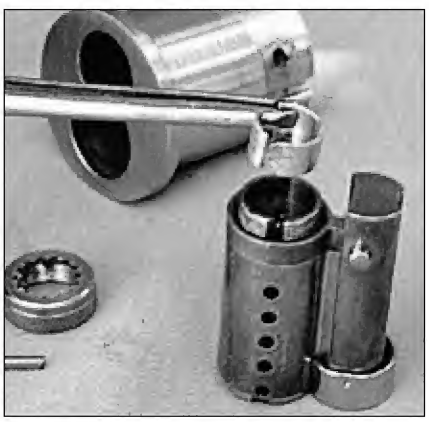
Photograph 2, is the IC lock as it is being taken out of the lock housing.

Since Mul-T-Lock's IC lock is modeled after the Schlage IC lock, it will fit all Schlage IC locks. Any lock that is now fitted with the Schlage IC lock, the Mul-T-Lock can replace. For example, the Simplex 1000 series combination door lock has a Schlage interchangeable core on the handle; the Mul-T-Lock will replace it.

Photograph 3, shows how to take the back off the lock for servicing; this is done in the same way as you would a Schlage lock.

The Schlage lock has an extra pin at the tip of the lock, which the control key activates. When the control key is inserted into the lock it activates the retainer that holds the core into the lock housing. The Mul-T-Lock IC lock works in the same manner. The tip of the key is cut back in such a way that it makes this pin rise above the shear line and activate the locking retainer. *(See photograph 4.)*

In the same photograph you will note where the ink pin is pointing, is the control pin mentioned above. Also, in this photograph you will note there are five pins in this plug. There are



3. This is how to take the back off the lock for servicing.

Wafer Lock Reading

also pins inside of these pins, which is the standard Mul-T-Lock pin within a pin design. Although you can see five pins there are actually ten pins, because of the pin within a pin concept.

Because of the pin within a pin design, pick resistance is greatly increased. It also has drill resistant hardened pins to deter a drilling attack.

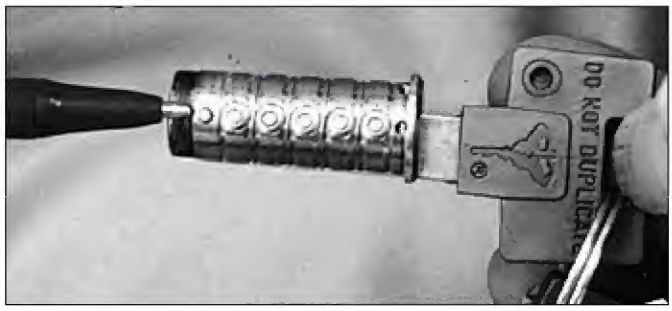
This lock also features Mul-T-Lock's three-in-one lock concept. To define the three-in-one concept, you can rekey this lock three times while it is on the door. The way it works is you have special pins in the lock which breakaway with each new key usage. When the second key is inserted and rotated in the lock, it breaks off part of the pin, essentially rekeying itself. When the cylinder is rotated, the tiny part of the pin that broke off will fall out of the lock. The first key will no longer work the lock.

You can repeat this same process with key number three. After the third key is used the lock needs to be rekeyed.

The advantage of such a design is that it allows the lock to be immediately rekeyed should the need arise. If there is a termination of an employee, the lock combination can be changed on the door immediately, and there is no need to worry about getting the key back from the terminated employee. The business owner can change the lock himself by just inserting the next key. After he reaches the third key, he must have a locksmith rekey the lock.

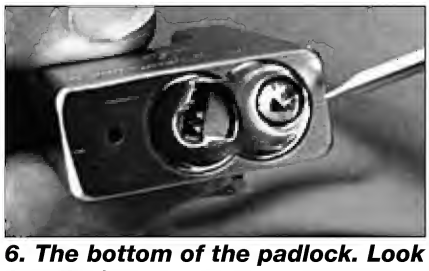
To eliminate any down time, the locksmith can sell his customer an extra set of removable cores. This way the customer would send the used core that needs to be rekeyed back to the locksmith after its maximum rekey settings and simply install a new core.

Also bear in mind that these keys can not be duplicated. The only way you can get a key is to cut it by code with a Mul-T-Lock machine. If you do not have a Mul-T-Lock machine you can get the keys cut by Mul-T-Lock. Mul-T-Lock will also sell a locksmith a key machine on payments, and if something happens where he no longer needs the machine, Mul-T-Lock will buy it back and pro-rate the use of the machine and condition.

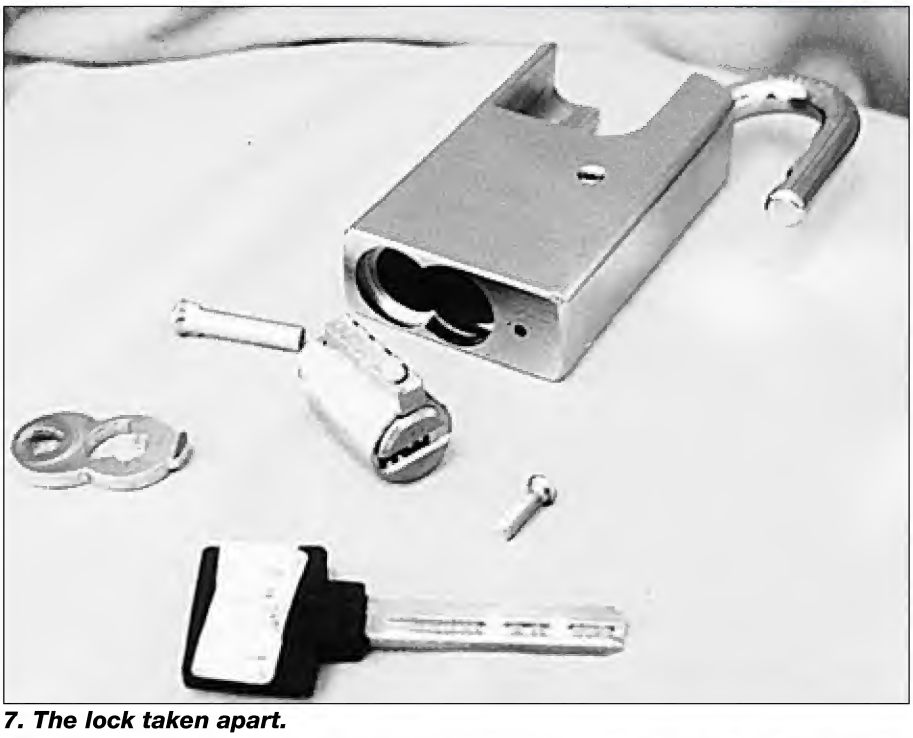


4. The tip of the key is cut back in such a way that it makes this pin rise above the shear line and activate the locking retainer.

5. The new Mul-T-Lock padlock. It is called a TS or TB-45P lock.



6. The bottom of the padlock. Look familiar?



7. The lock taken apart.

8. The screwdriver is pointing to the tailpiece of the lock.

Next, I will cover the new Mul-T-Lock padlock. It is called a TS or TB-45P lock as seen in *photograph 5.* This lock is designed like an American padlock.

Note in *photograph 6,* what the bottom of the lock looks like. Look familiar?

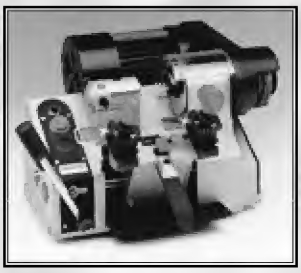
Photograph 7, shows the lock taken apart.

In *photograph 8,* you can see the back of this lock. The screwdriver in the photograph is pointing to the tailpiece of the lock. It is the same configuration as the American padlock cylinder. It will rekey the same as the three-in-one lock. Keep in mind that with the three-in-one lock system, if your customer needs five keys to the lock, with the three in one system you would be cutting fifteen keys, three sets of five different combinations.

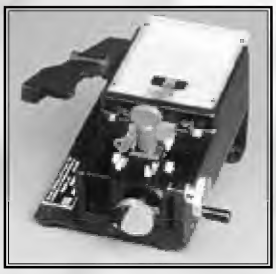
The keys are color-coded, green, yellow, and red, and you would have five of each color. The colors indicate the different rekeying capabilities. The first color being green, the second being yellow, and the third is red. The rekeying process must be done in this order. When the last key is used, the red color is a reminder of a "red flag" to call a locksmith for further service.

For more information, you can call Mul-T-Lock main office at (973) 778-3222, or fax at (973) 778-4007. Circle #267. TNL

YEAR-END PRIZES



Grand Prize
Silca Bravo Duplicator



1st Prize
HPC's 1200PCH Punch Machine

2nd Prize
Mas Hamilton's Auditcon 2100 & Certification Class

3rd Prize
Curtis 2100 Duplicator

4th Prize
SDC Magnetic Lock, Keypad and Exit Switch

5th Prize
LaGard "Smart Guard"®

6th Prize
$500 in All Lock Products

7th Prize
$500 in ASP Auto Locks

STRATTEC

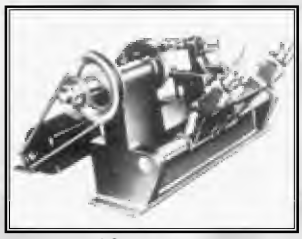
8th Prize
$500 in Strattec Auto Products

9th Prize
Arrow Exit Device and Mounting Kit

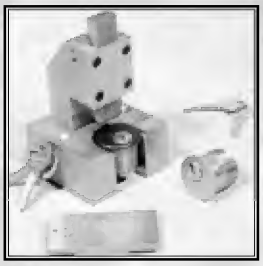
10th Prize
Dewalt Cordless Drill

11th Prize
Detex ECL-8010W Wetlock®

12th Prize
Securitron DK-26 Touchpad and CPU Board for Magnetic Lock



13th Prize
Foley-Belsaw 200 Key Machine



14th Prize
Accu-Mark™ Key Stamping Machine

15th Prize
S&G 6120 Electronic Safe Lock

These Prizes Awarded Each Month!

- *BWD Automotive Ford or GM KwiKit*
- *Wedgeco™ Key Extractor Kit*
- *Strattec Racing Jacket*
- *HPC Air Wedge™*
- *Sargent And Greenleaf 4400 Series Safe Deposit Box Lock*
- *A-1 Security Products*
- *ILCO Key Blanks (100 Blanks)*
- *Keedex "SPIN OUT" Screwdriver*
- *Tech Train Training Video*
- *Sieveking Products Gm E-Z Wheel Puller*
- *Major Manufacturing Products*
- *Slide Lock's "Z" Tool Opening Set*
- *The Sieveking Auto Key Guide*
- *Jet Key Blanks (100 Blanks)*
- *High Tech Tools*
- *LaGard Combo Guard*

Send in your tips, and win!

How To Enter

Send a tip on how to do any aspect of locksmithing. Certainly, you have a favorite way of doing something that you would like to share with other locksmiths. Write your tip down and send it to:

Jake Jakubuwski, Technitips Editor,
The National Locksmith
1533 Burgundy Parkway, Streamwood, IL 60107-1861

Or send your tips via E-mail to: Natllock@aol.com

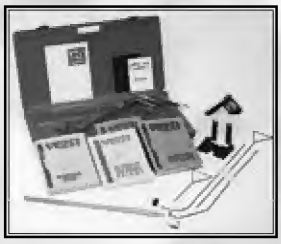
Rules & Regulations

Each tip submitted must include your full name, street address (no P.O. Box numbers), city, state, zip code, phone number, fax number or e-mail address.

Every Tip Published Wins

If your tip is published you will win one of the monthly prizes listed. At the end of the year, we choose winners from all the monthly tips published, that will be awarded one of the fabulous year end prizes. All you have to do to win is enter.

Prizes are arranged according to suggested retail price value.

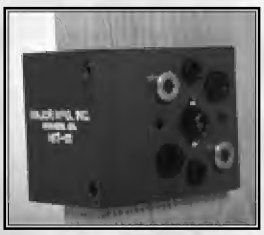


16th Prize
High Tech Tools 2500 Pro Set

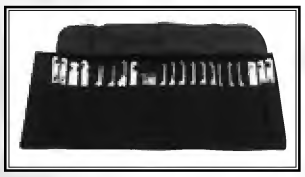
17th Prize
Slide Lock's Master "Z" Tool Set

18th Prize
ESP Products Sampler

19th Prize
Baxter JV-1 and JV-5 Code Books



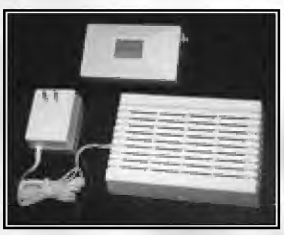
20th Prize
Major Manufacturing's HIT-111 Drill Guide



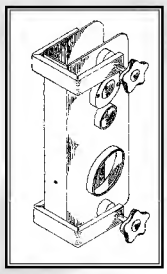
21st Prize
Falle Pick Set From Mark Bates Associates

22nd Prize
Sieveking Products Squeeze Play

23rd Prize
ABUS Padlock's Marine Padlock Display

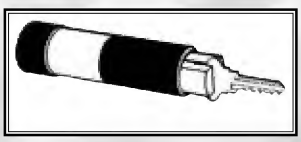


24th Prize
Rodan's AV 100 Heavy Duty Door Annunciator



25th Prize
A-1 J-50 Installation Jig

26th Prize
M.A.G. Engineering Sampler



27th Prize
Framon Impressioning Handle

The 15 Minute Safe Opening Technique

28th Prize
Book — 15 Minute Safe Opening Technique by Jake Jakubuwski

Jake's Tip of the Month...

Round Head Floor Safe Lockout Trick

by Jake Jakubuwski

In-floor safes using the LaGard lock mechanism such as Meilink, U.S. Safe, In-A-Floor, Pryor, etc., can often cause a lockout when the back cover plate retaining screws begin to loosen. The cover plate drops down just far enough to let the relocker on one or more of the bolts activate, thus locking the safe in the tube.

You can usually tell if one or more of the relockers has activated when you dial the combination and as you come around to the drop-in position, you can feel the fence drop but the dial feels like it hit a brick wall. It suddenly comes to a dead stop before retracting the bolts! At this point rather than get out the drill, try the following.

First dial the combination and bring the wheels around until the dial stops moving. At this point the lock mechanism is trying to retract the bolts, but they are stopped by the relocker. At this point begin rapping the face of the safe head (gently but with enough force to cause a vibration) with a deadblow hammer.

If the relocker is going to yield to this method, after a couple of blows with the hammer you will notice that the dial will move to the right. If it moves even slightly, the chances are pretty fair that it will open. Continue rapping with the hammer and turning the dial with your fingers until the bolts retract.

The reason this method can work when the back cover plate has loosened is because each of the three bolts on these types of heads have individual relockers. Most often one or two screws will loosen sufficiently to allow the back cover plate to "tilt" and activate a single relocker.

When that occurs, vibrating the plate against the relocker spring will often push the spring up and allow the bolt to retract. This won't work every time, and if more than one relocker has fired it may not work at all. Drilling may be your only option.

This trick should also work on Star heads, since those heads also have a screw retained back cover plate that will loosen.

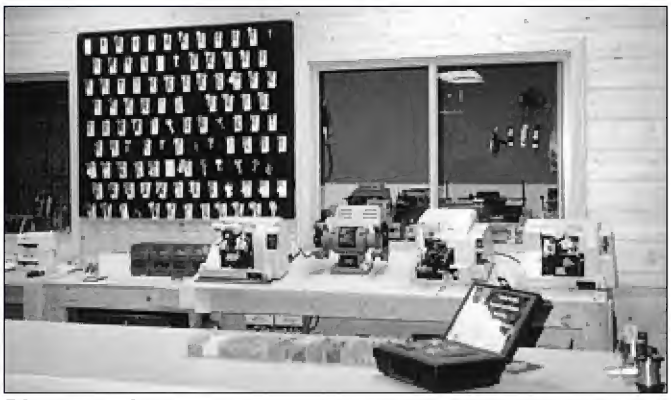
If you suspect that a loose back cover plate is the cause of the lock-out on the next LaGard-style round head safe you encounter, try this trick before getting out the big guns. It only takes a few minutes to find out if it will work and can save you a lot of strain and aggravation.

See Y'all next month!

BWD WINNER:
Rolling Keyboard Tip

Recently, we were fortunate enough to be able to expand our shop to three times its former size. During the remodeling, we looked for ways to reduce the linear footage (approximately 30 feet) of wall space that our old keyboards took up so we could devote the maximum amount of space to displays and merchandise racks.

Photograph 1.



Photograph 3.

Photograph 2.

What we came up with was the idea of utilizing heavy-duty track (the same kind that is used for barn or machine shop doors) to make sliding keyboards.

We made four 4' x 4' sliding panels using finishing nails for key hooks as seen in *photograph 1*. *Photograph 2*, shows the four panels hung from the heavy-duty slide track that is attached to cross beams across the ceiling. In addition to the four sliding racks, there is an eight-foot by four-foot rack that is attached to the back wall behind the sliding racks. The net result is that we have 24 linear feet of key rack space that takes up less than ten linear feet of wall space!

Photograph 3, shows the key rack immediately behind our sales counter where we keep the most popular numbers for customers coming in to have dupes made. The larger key rack is in the "back room" where our technicians do most of their work.

Gary Keenan
Iowa

WEDGECO™ KEY EXTRACTOR KIT WINNER:
Renault Ignition Shim Trick

You can impression a key to the Renault ignition locks that use the code series E, M, N, P, R, however, the tumblers are small and are housed in a plastic cartridge which, if damaged, cannot be salvaged. There is an easier way to do it.

To remove the lock cylinder housing from the column, it is necessary to turn the plug to a position halfway between the ACC position and the "run" or ON position. The lock can be picked to this location, but I have found these cylinders difficult to pick because of the tiny pins. I have found that shimming the lock from the front is a much more efficient way of picking the cylinder and turning it to its release point.

First, remove the shroud from the column. Then remove the security screw that is located in the rear of the housing. Next, place a standard shim above and to the right of the keyway. You may want to remove the small round stainless steel cover from the plug to make it easier to insert the shim, but it is not always necessary to do so.

Insert the shim in the shear line at about a 40° angle and apply light pressure to the end of the shim. Using a half diamond or hook, lift the tumblers until the shim moves through all five pin positions. With the cylinder "picked" turn the plug to the removal position, depress the lock retainer and carefully pull the cylinder away from the housing.

Disconnect the wiring harness at the modular connection located below the column and feed the wires out through the column.

The code is usually located on the lock cylinder housing and the first five letters are the code. Disregard any other numbers or letters you may find and use an X116 key blank.

Sometimes it is possible to read the code without pulling the ignition all the way out. To reassemble, simply reverse the above procedure.

Robert Blake
New York

STRATTEC WINNER:
Originating a Volvo Key

I was called out to make a key to a 1990 Volvo 740 wagon so I removed the rear door (hatchback) lock. Not having any space and depth keys for this car, I filed a VL-8 key blank blade to a razor edge and inserted it into the cylinder. With my file tang, I gently wiggled each odd numbered wafer, which marked my key very well.

When I was finished filing, I turned the key over and worked on the even cuts, then copied this key on both sides of a new blank in my key machine.

This trick worked so well for me that when the customer lost her keys the next day I made her a new key the same way. Occasionally, you may have to progress the last cut in the ignition lock, but I got lucky. *Bill Weingard*
Arizona

HPC WINNER:
Yale Panic Device Fix

A school custodian was causing havoc with the Yale mortise locks equipped with deadbolts on the premises. The tab on the deadbolt assembly that initiates the retraction of the latch is a small piece of bent sheet steel. Using a key on a

three-inch key ring, the custodian was exerting enough force to bend the tab and bypass the cam on the rear of the cylinder plug. In turn, the tab was jammed into a position where it was impossible to turn it back to remove the key or operate the lock.

Eventually I found that these locks would resist jamming much better if I adjusted the depth of the mortise cylinder in the lock so the cam is as close to the angle, or bend in the tab (where the tab has the most strength) as possible.

This means that on a right hand door, the mortise cylinder should be screwed in as far as possible and still function. On a left-hand door, it should be screwed out as far as possible and still work. Using the key ring now to lever the key is more likely to produce a bent or broken key. *Bill Weingard*
Arizona

SARGENT & GREENLEAF WINNER:
Weiser A630 Repair Trick

Parts for the Weiser A630 are getting harder to find, but here's an idea for repairing the cam pivot pin with a quarter inch long 4-40 screw:

Illustration A, shows the location of the pivot pin that is prone to break. If you have one with this problem, simply tap the hole (no need to drill) to accept a 4-40 machine screw. After installing the screw, replace the cam with to thin washers as spacers and you're back in business!

Charles M. Mort, CRL
E-Mail

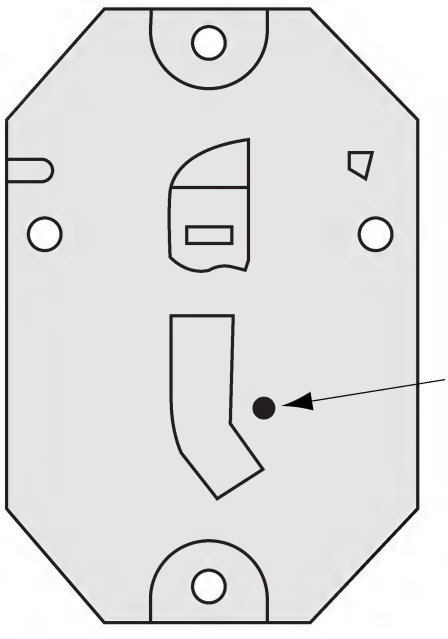
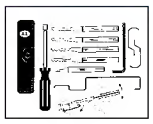


Illustration A.



A-1 SECURITY PRODUCTS WINNER:
Key Stop Tip

I did a job for an elderly couple that quite obviously had little money to spend on high security locks, yet they were concerned about the number of people (family and friends) who had keys to their home. They asked me if I could devise a way to block out the other keys.

Illustration B, shows how I modified the cylinder plugs in their locks and in turn modified the keys to work in the newly reworked plugs.

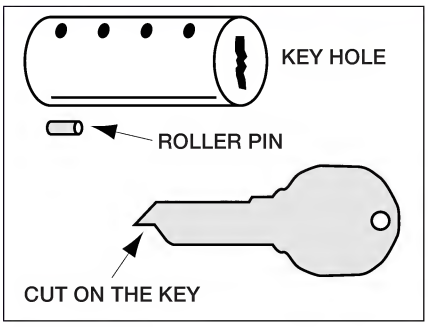


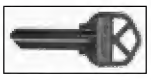
Illustration B.

As you can see by the illustration, I used a roll pin about 3/8" long to block the back end of the keyway in

the plug. Then, I cut a notch on the bottom of the new keys to accommodate the roll pin. Just to be on the safe side, I rekeyed the cylinders.

In addition to the rekeying of the cylinders negating the use of the old keys, the roll pin would stop a normal key from seating properly in the keyway. As an added precaution, I used mushroom pins when I rekeyed the cylinders to increase the prick resistance of the locks. I realize these modifications will not turn these locks into Grade 1, High Security locks, but they fit the bill nicely for these folks.

Kris Tatarian
California



ILCO KEY BLANKS (100) WINNER:
Honda Lock Removal Tool

Illustration C, shows a pair of TruArc pliers that I modified to push the double spring loaded detents that are found on some older Honda models that use the X-181 keyway.

To remove these locks, you have to depress both detents at the same time after you remove the handle from the door. By using the 90˚ tips and turning them inward as shown in the

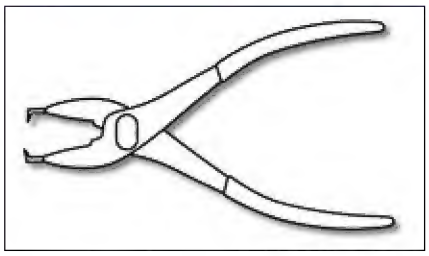


Illustration C.

illustration, depressing both detents is easy.

I am sure this idea will work for other locks although I have not yet tried the pliers in other applications.

John Day
Washington

KEEDEX WINNER:
Corbin Key Blank Tip

I supervise the locksmith unit at a major university hospital in New Jersey. Among the many buildings throughout the campus, we use several different keying systems, however, Corbin-Russwin is our primary locking system. We only use original key blanks, which as everyone knows, means there are no keyway markings on the blanks. After cutting many keys on the wrong blank many times, I came up with a method of eliminating the guesswork over these keyways and made it easier for all the locksmiths in the shop.

I went to our carpenter shop down the hall and asked for a piece of scrap wood, about 1'x2'. They did one better. In the scrap pile was a piece of plywood about an inch thick, and covered with Formica.

After taking it to my shop, I drilled a series of evenly spaced holes just big enough for a cylinder plug to fit snug and marked each hole with it's proper keyway. Bingo! No more wrong keys. The guys in the shop use it all the time, and in fact, we have even expanded the idea to Yale and Schlage as well.

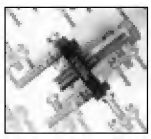
Tom Karausky
New Jersey

TECH-TRAIN TRAINING VIDEO WINNER:
Kwikset Tool Conversion

I was asked to repair some panic hardware where the key would not lock or unlock and the customer said the device never really worked right in the first place.

I took the bar off the door and

discovered that the tailpiece was cut too short. Not being able to identify the hardware, I was sure I would not have a replacement tailpiece. I did, however, have a couple extra Kwikset cylinder removal tools. They were the same thickness so all I had to do was cut one to length and modify one end to fit the cylinder in the outside trim. It worked perfectly. *Mark Jackson*
California



SIEVEKING PRODUCTS GM E-Z WHEEL PULLER WINNER:
Chevy Nova Key Generation

I have a customer that specializes in repairing Toyotas. Not surprisingly, they also work on a lot of 1986-1988 Chevy Novas (re-badged Corollas). I found that by using my X137 EEZ Reader, I could quickly, generate both primary and secondary keys for these cars.

Even though the published depths and spaces are very similar, I found that the marks on the tool did not line up on the Novas exactly as they do on Toyotas. However, I found that if I start from the rear and work towards the face of the lock, one wafer at a time, I can use the tool in the same manner and accomplish the accurate decoding of the lock and use that information to generate a key.

Little discoveries like this make my day. I hope this information may make yours better too. *Matt Eggleton, CRL*
North Carolina

MAJOR MANUFACTURING PRODUCTS WINNER:
Quick, Temporary Rekey Trick

I use this temporary rekey method at the high school that I work, but it works equally well for business and apartment complexes where a tenant or sub-lease tenant will only be using the area for a short time.

Every year we consolidate our summer school classes in two or three of our schools. This requires rekeying anywhere from 50 to 100 door locks because the teachers for summer school are not the teachers regularly assigned to those rooms. The whole district is grand mastered, mastered, and sub-mastered. Since I only have two days between regular school and summer school, rekeying time can be a real problem.

I made up a bunch of small coin envelopes with the school, room, key number, and bitting. All that is necessary is to remove the pins and spring from the 6th chamber and put them in an envelope to be replaced after summer school. I give the new teacher a (short key) a 5-pin key which will only operate that lock. This does not disturb the master keying setup, and the regular teacher's key will still work as well. This saves a lot of time effort and pins. *Steve Shields*
California

SLIDE LOCK'S "Z" TOOL OPENING SET WINNER:
Asuna Opening

I got a call to open a 1993 Asuna Sunfire and did not find any reference to it in any of my manuals. After talking with my customer, I found out that the car is manufactured in Canada and is similar to the GEO Storm.

With that information, I went after the bottom horizontal linkage and opened the car easily. *Dave Nissen*
Minnesota

Continued on page 93

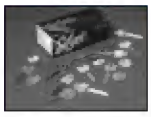
THE SIEVEKING AUTO KEY GUIDE WINNER:
Another Shear Head Bolt Removal Idea

I do my share of foreign car ignition removals and have found over the years, that the hardest part of the job is removing the ignition housing headless bolts. I have tried the hammer and awl approach, the Dremel approach with a lot of dust and shavings. The best way I have found is the following method.

Sears sells a Craftsman Automatic Center Punch that is about 4-inches long, which is just the right size to fit into the smallest of dash areas. All that you have to do is put the point on the bolt in the direction to loosen the bolt. Then, with three or four "hits" of the center punch, the bolt backs right out. Then just do the opposite to tighten it.

David Shaffer, RL
Ohio

Editor's Note: Depending on where you buy an automatic center punch, they will cost you between fourteen and twenty dollars. However, they are well worth having in your toolbox.



JET KEY BLANKS WINNER:
Removable Stick on Advertising

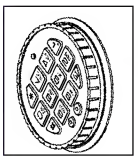
Ever get an advertising decal you wanted to display on your service vehicle, but didn't want to apply it because of the adhesive backing and what it would do to the paint?

I recently had an auto club send me their adhesive (sticky) logo/decal. I went to a local sign shop and purchased a piece of magnetic (plastic) material which comes in a variety of colors and is inexpensive. I applied the adhesive backed decal to the magnetic material, trim to size and then put the now magnetic logo on my vehicle.

Now, when necessary, the decal comes off easily and without damage to the paint. Putting the decal on a magnetic backing is also a lot cheaper than a logo or advertisement painted on your van.

Mike Strohbusch
Wyoming

Editors Note: Mike, good idea! However, let me caution you to take the magnetic sign off of your van every couple of weeks and clean the painted surface of the van and the back of the magnetic sign. I know from experience that if you leave a magnetic sign on your van without cleaning under it, the paint will begin to pit and rust can form because of the moisture and acidic nature of soil and road grime.



LA GARD WINNER:
Opening Sentry's New KeepSafe

I was asked to open an in-floor round head safe called KeepSafe. The KeepSafe is made by Sentry Safe (John D. Brush, Co. in New York) and is their model #7250.

The 7250 dial is not the same type of dial used on the earlier Sentry round heads. On the earlier dial you can remove an insert in the center of the dial and have access to the screw that holds the dial on the spindle. On the 7250 there is no insert or screw. The new dial is a one-piece unit and is pressed on the spindle, which means the only way to remove these dials is to destroy the dial.

I know you can drill a hole nearly anywhere in a Sentry head and scope the wheels but here's the way I opened this safe without a scope:

First drill a 1/4", or larger hole through the dial and into the head. I use this hole to insert a screwdriver to hold the dial steady while I drilled out the spindle.

Next, I drilled right down through the center of the dial drilling out the spindle and allowing the spindle and the wheel pack to fall deeper into the head of the safe. This head has a deep "well" to it and there is plenty of room for the wheel pack to fall out of the way for the next step.

With the wheel pack out of the way, there is nothing to block the two bolts from retracting. The bolts are on a spring loaded cam or activator bar and all I had to do was tap the safe head with a hammer to vibrate the cam. The two spring-loaded bolts will snap back and the safe is open.

There were no relockers on the head that I worked and when I encounter another one, I don't think the opening will take more then five minutes.

Bill Wessel
California

HIGH TECH TOOLS WINNER:
Lexus Trunk Access

Here's how I retrieve keys that are locked in the trunk of most Lexus sedans that I encounter.

The rear deck (below he rear window) has a large speaker box in the center. Carefully pry up the plastic speaker cover and remove the three bolts that hold the subwoofer down. Two of the bolts are set back into the deck, near the window, but are accessible.

With the bolts removed, unplug the speaker connectors and remove the speaker. Removal of the speaker leaves a hole about the size of a bowling ball that leads directly into the trunk. If you have long, thin arms, you can reach in and retrieve the keys. Personally, I prefer to use a long rod with a hooked end to snag the keys.

David Fairchild
California

TNL

The Lighter Side

"Having A (Hot-Pink) Ball"

by Sara Probasco

Sometimes, morning comes awfully early on Monday. Sitting at the breakfast table, hunched over my steaming mug of coffee one such day, I was doing facial calisthenics in an attempt to get my eyes to stay open, when I heard a low chuckle from behind Don's newspaper.

"What?" was about all even my curiosity could manage to mutter, at that stage of semi-wakefulness.

"Have you read this?" he answered, chuckling again.

"Nope," I replied, going back to slowly stretching my left eyebrow up my forehead three times. I hate it when he's so cheerful in the morning.

For my benefit, he began to paraphrase the news article in question. "Here's an elderly lady returning to the parking lot at the mall after doing some shopping, and she finds four guys sitting in her car. She drops her shopping bags, pulls a handgun out of her purse, and starts screaming at them at the top of her lungs that she knows how to use a gun and will blow them away, if they don't get out of the car."

Don began chuckling again.

"What's funny about that?" I mumbled, deeply inhaling coffee fumes as I concentrated on raising my right eyebrow, one... two...

"Just wait. These four guys leap out of the car and take off running, so the lady proceeds to load her shopping bags into the back seat. Then she gets into the driver's seat and pulls her keys out of her purse." By this time, Don was doubled over, laughing.

I stared at him through barely open eyes and wondered how long a person should wait before having her spouse committed to a mental institution.

Wiping tears from his eyes with his napkin, he continued: "Her keys won't fit! See, it isn't really her car at all. Her identical vehicle is parked four or five spaces away."

He was laughing again. "Can't you just see it! These guys sitting in their car, minding their own business, and this old lady comes up with a gun...."

"I get the picture," I said, smiling as I managed three coffee-mug-lifts to my lips. "So what happened next?"

"Next?" Don sobered momentarily while his eyes scanned the page. "Well, it says she transferred her packages and everything into her own car and drove down to the police station to report the incident. And — get this." He had begun sniggering again as he read aloud, "The sergeant broke out laughing and pointed to the other end of the counter where four visibly shaken men were filling out a car-jacking report against an 'insane, elderly woman with a gun'." Don dissolved into laughter.

I guess you'd have to be reading it.

I smiled sympathetically and went back to my coffee-fume inhalation therapy. It was working. One eye was almost open, now. I could see that Don wiping his eyes with his napkin, again.

"Then what?" I asked, not wanting to seem disinterested after what he was going through.

He waved away my question. "Oh, all the charges were dropped. But can't you just see it?"

It seemed so important to Don, I tried to imagine the scene, but it eluded me. "Whatever happened to hot-pink tennis balls, anyway?" I asked Don.

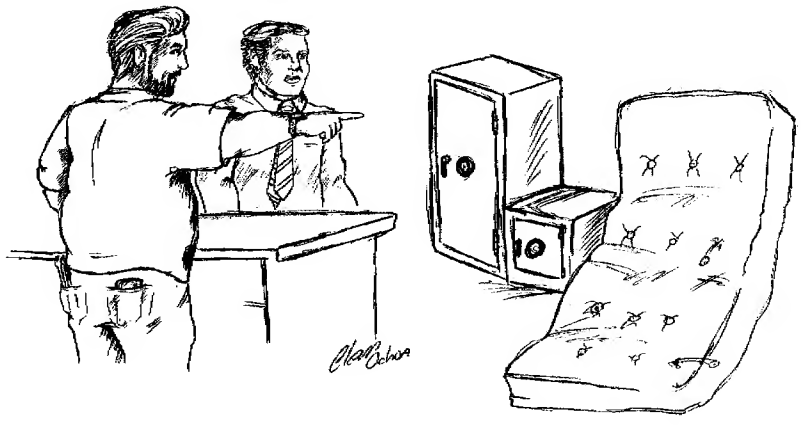
"What?" Don stopped mopping his eyes with his napkin. His smile faded as he squinted in my direction, his face a picture on non-comprehension.

"Don't you remember when the kids were small, how we'd jam a hot-pink tennis ball on the radio antenna so we could spot our car in parking lots?"

"Yeah, well, sort of. But what does that have to do with anything?"

"If the lady in the article had done that, she would have saved everybody a lot of headaches."

"Hmmm." Don returned to reading his paper.



"I had a customer ask if I stocked any 'cheap safes' and this cartoon came to mind."

- Thank you, F. Peterson from Stockton, CA, for this cartoon.

"That would have helped Javana, too. Remember when Leo's doctor sent him to the hospital? He called Javana, described his car, said he'd left his keys in the ignition, and asked if she would pick up his car at the doctor's office and keep it until he got back."

"Was that when the other guy at the doctor's office (who had also left his keys in the ignition) called the police and reported his car stolen?" Don asked, peering over the top of the pages.

"Right. And then, while they were inside the doctor's office filling out the report, Javana — who by then had discovered her mistake — returned his car and took Leo's. But the point is, she would never have taken that other man's car in the first place, if there had been a hot-pink tennis ball on Leo's antenna. She would have known for sure which one was his."

"Hmmm." Don was back into his newspaper again.

"And what about the guy we heard about who drove home from the office one night in the wrong car - same make and model as his, same color, keyed to the very same keys as his own vehicle. What finally tipped him off was the difference in color of the interior. He, too, could have avoided all the hassle with a hot-pink tennis ball."

Don laid down the paper. "Don't forget that lady who called us recently saying her door lock wouldn't work and got Rickie to open the car for her, only to find her key wouldn't go in the ignition, either," he said.

"I'd almost forgotten about that. The owner came running out of his office to see what they were doing to his car."

"Then, when the lady found her own car a few spaces farther down the street, she discovered she'd left her purse in the other car, and Rickie had to go into the man's office and get his permission to retrieve it from his locked car," Don added. "What a day that was."

"Well, it could all have been avoided if the lady had only...."

"I know, I know, '...had a hot-pink tennis ball on her antenna'."

"Right!"

"You know, there's just one problem with your little theory."

"What's that?"

"On most automobiles, these days, antenna retract into the fender when you turn off the radio. How do you propose to keep the ball from falling off?"

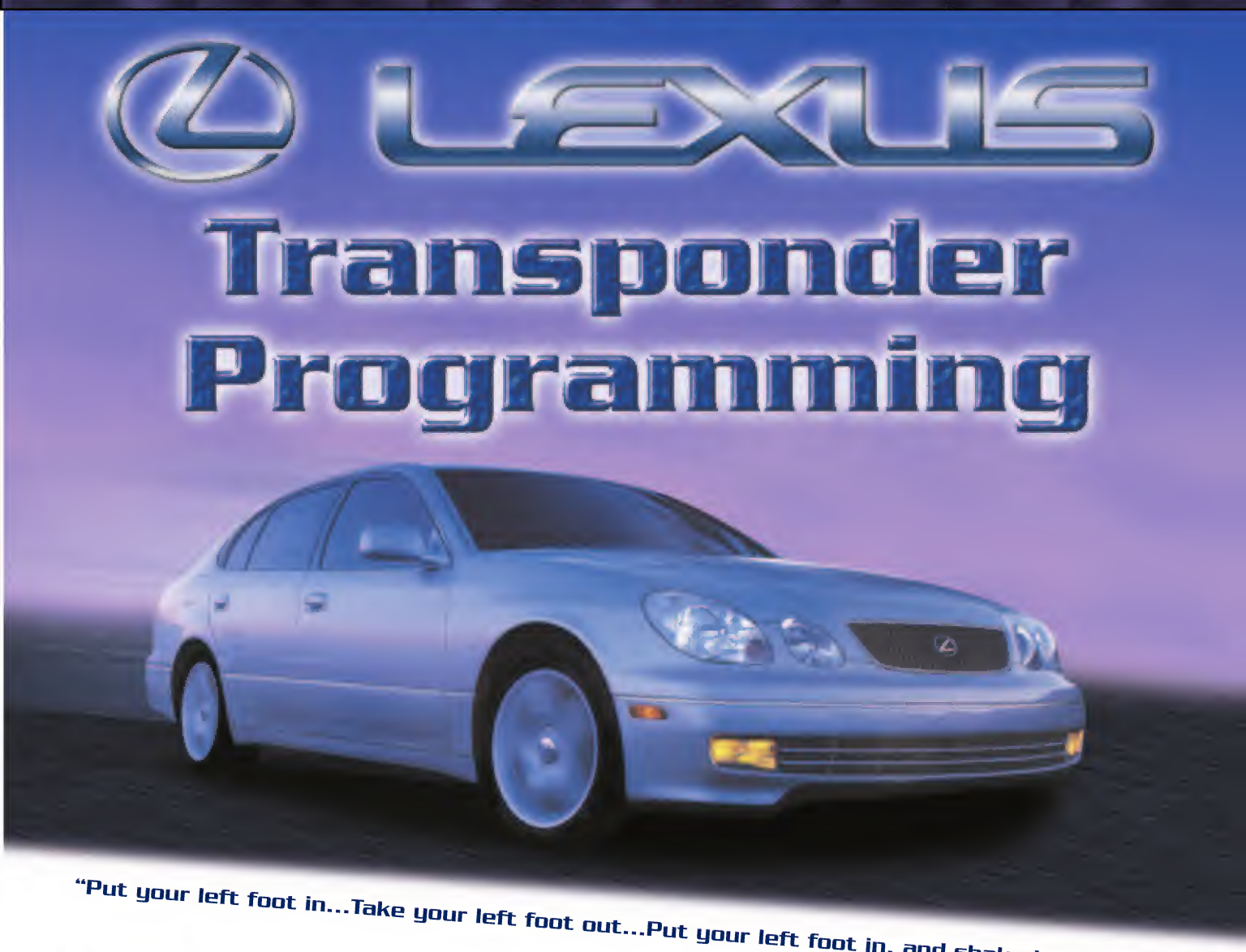
I could see myself starting across the parking lot at the mall and playing hop-scotch over thousands of hot-pink tennis balls that had popped off people's retracted antennae.

"I have no idea," I sighed. "Oh, well, as they say, 'The best laid plans...'."

"'...sometimes turn out to be rotten eggs," Don finished with a grin.

TNL

Lexus Transponder Programming



"Put your left foot in...Take your left foot out...Put your left foot in, and shake it all about..."

by Randy Mize

No,it's not the Hokey Pokey. It's all part of the new 1999 Lexus remote/transponder key programming procedure.

In 1997, both Toyota and Lexus introduced models that include security systems that are backed by transponder technology. Programming duplicate keys for these vehicles involves a sequence of alternately depressing the accelerator and brake pedals. Stepping on the pedals the correct number of times and in the correct order is essential to successful key duplication for these vehicles. In fact, a simple misstep or miscount requires that the technician exit and restart the programming sequence.

Unfortunately, when it comes to the programming, the choreography is all but certain. In 1997, a version of the programming sequence was released, and, for the most part, worked. (In some instances, the programming sequence had to be repeated several times before the key was actually be accepted.)

For 1998 and 1999, however, there seems to be some minor differences that mean the difference between success and failure.

The following procedure, performed on a 1999 Lexus GS300 *(see photograph 1)* was introduced on the 1998 and up Toyota and Lexus vehicles. The Lexus version is available with a remote key head. This, too, needs to be programmed.

Lucky, locksmiths performing these procedures flawlessly, make it look as though they're dancing the Hokey Pokey. Those less fortunate, however, appear to be performing the Gerbil Dance of Death. (Brain deterioration due to aging causes gerbils to endlessly run in circles and/or flip-flop like a fish on land - thus dubbed the "Gerbil Dance of Death.")

For 1999, aside from the new programming sequence, Lexus has also introduced a new key. Still using an

1. A 1999 Lexus GS300.

2. Lexus has introduced a new key.

3. Cycle through Lock/Unlock using electronic lock button.

internal 4-track design, the new Lexus key is similar to the previous unit in that it includes both a remote key head for locking/unlocking the door locks and a security panic button, plus a separate transponder that controls the ignition/starter cut-off. Unlike the previous key, the new key is shorter and requires a different accelerator/brake programming sequence for adding duplicate keys. *(See photograph 2.)*

While new keys are available only through the Lexus dealer, a locksmith may find occasion to program a duplicate key. To program two different procedures must be followed to the tee - programming the remote function (door lock/unlock) and programming the transponder security function. Following are the two procedures:

1999 Lexus Remote/Transponder Duplicate Key Programming

Remote Programming:

1. Open vehicle's driver side door. (Leave door in open state.)

2. Using the electronic Lock/Unlock button found on the door's armrest, cycle through lock/unlock five times. (i.e. Lock-Unlock, Lock-Unlock, Lock-Unlock, Lock-Unlock, Lock-Unlock.)

3. Close door.

4. Open door.

5. Repeat step 2 - Cycle through Lock/Unlock using electronic lock button (do not manually lift/depress the lock button) on the door's armrest five times. *(See photograph 3.)*

6. Insert the new key into the ignition and turn to ON position.

7. Turn key to OFF position and remove key.

8. Simultaneously, depress and hold the remote's PANIC and UNLOCK buttons found on the key's bow. During this time, the vehicle's security module is performing the program function. The SECURITY mode LED will flash during this process. The LED is located near the trunk release button, just below the driver side window vent.

9. A beep or chime signals the end of the program function. Release the PANIC and UNLOCK buttons. The vehicle's door lock and panic

4. Insert an existing working or registered MASTER key.

functions can now be controlled via the new remote key.

Transponder Programming:

This vehicle includes programming for both a MASTER key and a VALET key function. Only an existing working or registered MASTER key can be used to access the security module's program function for adding a duplicate key.

1. Insert an existing working or registered MASTER key and turn to the ON position. *(See photograph 4.)*

2. Depress accelerator pedal five times. *(See photograph 5.)*

3. Depress brake pedal six times.

4. Turn key to OFF and remove from ignition lock.

5. Insert new key. Do not turn to ON position.

5. Depress accelerator pedal five times.

6. Depress accelerator pedal one time. The security light blinks for approximately 60 to 90 seconds.

7. When security light goes out, remove the key.

8. Step on brake pedal one time to release security module's program mode.

Once the programming sequences outlined above have been completed, try the key and the remote. You'll know shortly whether you performed the Hokey Pokey or the Gerbil Death Dance.

TNL

BUSINESS BRIEFS

Kenstan Lock Design Winner

The winner of the 1998 Kenstan design contest was announced at this year's Globalshop Show and a check for $5,000 was presented to Michael Johnston, Executive Vice President and General Manager of Trinity Engineering for their winning submission.

Trinity's display cabinet features a locking system that locks or unlocks twenty drawers at one time with an effortless turn of the key.

Security Lock Chosen Distributor of the Year

For the second year in a row, the South Florida Locksmiths Association has named Security Lock Distributors their "Distributor of the Year." The award honors Security for outstanding efforts in servicing the needs of locksmiths. David Block, Branch Sales Manager and Larry Tanke, Technical Manager, are shown receiving the award.

For more information call: 800-847-5625; Fax: 800-878-6400; E-mail: info@seclock.com; Web: http//www.seclock.com.

Ingersoll-Rand Appointment

Ingersoll-Rand Company announced the election of Herbert L. Henkel as president and chief operating officer. In addition, Henkel has been elected to the New Jersey-based manufacturing company's board of directors.

Monarch Merger with Ingersoll-Rand

Monarch Hardware has made significant changes since its successful merger with architectural hardware leader Ingersoll-Rand. As a result of the merger, Monarch has remained a separate component of Ingersoll-Rand and functions as an independent business unit. Monarch continues to manufacture a broad range of panic and fire exit devices and trim, with primary market applications being focused on the retrofit and new construction markets.

U.S. Lock Opens Texas Center

U.S. Lock Corporation has opened a sixth service distribution center. The new Dallas, Texas location is fully stocked providing one-day shipping service to the entire region and is equipped with a complete city sales service center. Scott Combs, a 10-year industry veteran, manages the facility at 2610 Andjon Drive.

U.S. Lock's Dallas office can be reached at 214-351-3747.

BWD Manufacturing Location Changes

The decision to close the BWD Automotive (formerly All-Lock) operation in Selma, Alabama was announced on March 19, 1999. The closing date is effective December 31st, 1999.

Parts purchased from All-Lock that were manufactured in Selma will now be manufactured in the Mexico plant in Matamoris, Mexico. This plant has been in operation since 1989 and is currently ISO 9002 Certified. The sales office will still be in Selma.

For more information call: (800) 647-4926 or (334) 874-9001; Fax: (334) 874-6011.

New GSA Schedule Products from Lockmasters

Lockmasters now offers a number of security items on

GSA Schedule. Products include Lockmasters' ScifLock, S&G combination locks, S&G sliding deadbolts, LaGard ComboGard and more.

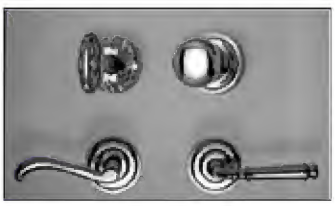
For information check the web at: www.lockmasters.com or call 1-800-654-0637, ext. 498 for a copy of a complete brochure and price list. Circle #300.

Access Hardware Stocking Locknetics CM5100 and CM5500

Access Hardware Supply is stocking the Locknetics new CM5100 and CM5500 card reader locksets The CM series electro-mechanical locksets is now available with an ABA standard trak 2 magnetic stripe card reader that easily integrates with most existing phone, credit and "one-card systems". Lock models include cylindrical style, latchbolt mortise, and the Auto Bolt mortise style.

For more information call: 800-348-2263 or fax: 800-435-8233. Circle #301.

Omnia offers Seven New Interior Latchsets



Omnia Industries has introduced seven new interior latchsets to further expand their extensive line of solid brass locksets.

These new traditional and ornate designs include both knob and lever configurations. All are available in a variety of finishes, including polished and lacquered brass and polished chrome. Some models can be ordered in additional finishes including shaded bronze and satin chrome or nickel.

For more information call: (973) 239-7272. Circle #302

ABUS New Express

In support of the locksmith market and in concert with the locksmith distributor, ABUS has introduced the new "ABUS-Express" program. Now locksmiths will be able to order and be shipped direct from ABUS for all their padlock and hasp needs. ABUS recognizes the new "E-commerce/Internet" consumer direct programs being offered by the national chain stores, which compete with the locksmiths' service. ABUS developed this new "Express" program to give the locksmith an alternative source of high quality (ISO-9000 certified) padlock and hasp products priced very competitively, with the same day shipment, and in store merchandising support.

For more information call: 1-800-352-2287.

Security Lock Adds Two Technical Positions

Jeffrey (JR) Hentschel and John Singleton have joined Security Lock. Both will be working in the firm's expanded Electronic Products Access Control Division. Hentschel, stationed in Boston, is a member of the Technical Products Department.

For more information call: 800-847-5625; Fax: 800-878-6400; E-mail: SECLOCK @ IX.NETCOM.COM; Web: http://www.seclock.com

TNL

THRU THE KEYHOLE

A Peek at Movers & Shakers in the Industry

ATTENTION MANUFACTURERS AND DISTRIBUTORS:
Would you like your company and products to be profiled in *Thru The Keyhole*? Please call Editor, Greg Mango, at (630) 837-2044.

ABLOY®

ABLOY® Construction Locking moving North American Facility

Due to increased demand for ABLOY DISKLOCK PRO products as well as to better serve their USA clients, the Brooklyn office of ABLOY Construction Locking will merge their complete operations into a new division of ABLOY Canada Inc. which will be called ABLOY Door Security, North America.

This new division which will be based in Montreal, will continue to offer USA clients excellent service along with next day shipping on virtually all orders.

This new North American facility with more than 30 years of ABLOY experience contains sales, marketing, customer service, master keying departments, as well as complete assembly operations for all door security products in North America.

Also housed in this facility is the only North American based ABLOY DISKLOCK PRO, computer controlled production key machine. This key machine cuts an extremely precise key every 10 seconds, which translates into quicker service on virtually any size order for locks, keys and ABLOY master systems.

The new ABLOY Door Security team promises to increase their USA market penetration and their overall profile in the locksmith industry by providing excellent products along with above average service on the complete range of DISKLOCK PRO products.

The unique and patented ABLOY DISKLOCK PRO rotating disc cylinder mechanism offers the maximum in high security features in a UL 437 listed cylinder.

This includes patented keyways, the only completely hardened steel mortise/rim cylinder, the industry's most extensive master keying capability, along with maximum resistance to harsh environments and wear.

With one of the most complete ranges of products that retro fit virtually all applications with a "one key fits all products" approach that few competitors can match. TNL

Circle # 282 on Rapid Reply Card.

KEY CODES

New GM Code Series

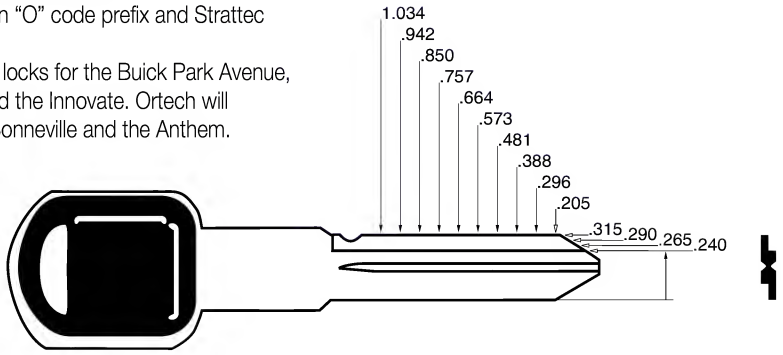
S000A-S711K, Part 3

General Motors is introducing a new 10-cut code series for the year 2000 vehicles. The code series is being split between three lock manufacturers: Huf, Ortech and Strattec. The letter prefix designation of the code will determine which manufacturer produced the lock. For instance, Huf codes will have an "H" prefix. Ortech will have an "O" code prefix and Strattec will have an "S" code prefix.

From the information we have gathered, Huf will be supplying locks for the Buick Park Avenue, Catera, Cadillac Seville, Cadillac Eldorado, Cadillac DeVille and the Innovate. Ortech will supply locks for the Buick LeSabre, Oldsmobile 88, Pontiac Bonneville and the Anthem. Strattec will supply codes for all other GM models.

All previous 10-cut key blank and spacing and depth information remains the same. The only thing new is the code series.

As with the original 10-cut code series, this is a very large series addition. The portion of the code series we are presenting here is the Strattec series identified by the letter "S" prefix.



Manufacturer: Strattec for General Motors
Code Series: S000A - S711K
Key Blanks:
BWD: M95DB or M95DBL
Curtis: B-82 or B-86
Ilco: P1102
Ilco EZ: B82
Jet: B82 or B82NP
Silca: GM39
Strattec: 597500 (88 & 75 Grove)
Number of Cuts: 10
M.A.C.S.: 2
Key Gauged: Tip
Center of First Cut: 1.034
Cut to Cut Spacings: .092
Cut Depth Increments: .025

HPC 1200CMB
Code Card: CF215
Jaw: A
Cutter: CW-1011
Gauge From: Tip
HPC 1200PCH (Punch):
PCH Card: PF215
Punch: PCH-1011
Jaw: A
Silca UnoCode
Card Number: 567
HPC CodeMax
DSD #: 259
Jaw: A
Cutter: CW-1011
Curtis No. 15 Code Cutter:
Cam-Set: GM-6
Carriage: GM-6A

Framon #2:
Cuts Start at: .216
Spacing: .092
Block #: 3
Depth Increments: .025
Key Clamping Info: Using spacing clip, align tip of key with left side of vise. Lay clip flat on left side of vise and slide key in from the right.
A-1 Pack-A-Punch
Quick Change Kit: PAK-G1
Punch: PAK-90T
Die: Standard
ITL 9000 & 950
Manufacturer ID: 519

Spacings:
1 - 1.034
2 - .942
3 - .850
4 - .757
5 - .664
6 - .573
7 - .481
8 - .388
9 - .296
10 - .205
Depths:
1 = .315
2 = .290
3 = .265
4 = .240

S000H 2432243442
S001H 2332342443
S002H 2334213132
S003H 2342132442
S004H 2332443132
S005H 2332234243
S006H 2334423224
S007H 2331331223
S008H 2332243242
S009H 2342133224
S010H 2331321242
S011H 2334224232
S012H 2334323442
S013H 2334324342
S014H 2334312434
S015H 2332112442
S016H 2334312312
S017H 2332424232
S018H 2334244212
S019H 2332123422
S020H 2332231124
S021H 2332134312

S022H 2334234434
S023H 2331343112
S024H 2334343242
S025H 2331321342
S026H 2332343124
S027H 2332131322
S028H 2332443342
S029H 2332234422
S030H 2332124423
S031H 2332423242
S032H 2342121134
S033H 2342213324
S034H 2342131124
S035H 2332331212
S036H 2342123442
S037H 2332313442
S038H 2332242312
S039H 2332123132
S040H 2334423132
S041H 2334243224
S042H 2334423342
S043H 2332324212

S044H 2334213224
S045H 2332242134
S046H 2342213234
S047H 2334223242
S048H 2334233112
S049H 2332344212
S050H 2342113422
S051H 2332134233
S052H 2332433112
S053H 2332122342
S054H 2342134422
S055H 2331324312
S056H 2332324313
S057H 2331343242
S058H 2332123122
S059H 2331313422
S060H 2334221324
S061H 2332133112
S062H 2342121342
S063H 2332423122
S064H 2332344222
S065H 2334231224

S066H 2334244242
S067H 2334331124
S068H 2334421334
S069H 2334313122
S070H 2331334244
S071H 2331344224
S072H 2332431224
S073H 2332242112
S074H 2342113122
S075H 2332244312
S076H 2332133123
S077H 2332131244
S078H 2332442324
S079H 2332243422
S080H 2332423422
S081H 2332134242
S082H 2332131224
S083H 2332422134
S084H 2334242442
S085H 2332213422
S086H 2334422442
S087H 2342133132

S088H 2332331124
S089H 2332432422
S090H 2332113312
S091H 2334342342
S092H 2332431312
S093H 2332431134
S094H 2334234342
S095H 2334433122
S096H 2332321312
S097H 2332323422
S098H 2332244232
S099H 2342134242
S100H 2332324232
S101H 2334431324
S102H 2332244213
S103H 2331342244
S104H 2331323442
S105H 2332432242
S106H 2342113242
S107H 2334424242
S108H 2331342434
S109H 2332422434

S110H 2331323124
S111H 2334323112
S112H 2334223422
S113H 2334432342
S114H 2332234212
S115H 2332324242
S116H 2334223122
S117H 2342213112
S118H 2342112434
S119H 2331342312
S120H 2332234242
S121H 2331334422
S122H 2334334422
S123H 2332312422
S124H 2331331213
S125H 2342121312
S126H 2332133423
S127H 2334243434
S128H 2332422342
S129H 2332234234
S130H 2332213342
S131H 2332322442

New GM Code Series
S000A-S711K, Part 3

S132H 2332212312
S133H 2332332422
S134H 2331331123
S135H 2334424422
S136H 2332344312
S137H 2334234312
S138H 2334213312
S139H 2331344324
S140H 2334424334
S141H 2342211334
S142H 2334231342
S143H 2332132312
S144H 2334342434
S145H 2334344232
S146H 2342124434
S147H 2332113132
S148H 2331344243
S149H 2342123324
S150H 2331342113
S151H 2334421124
S152H 2334232422
S153H 2331344313
S154H 2334243342
S155H 2332233113
S156H 2334342134
S157H 2334424212
S158H 2332131232
S159H 2332442442
S160H 2342123112
S161H 2334213434
S162H 2334212442
S163H 2332313424
S164H 2342133434
S165H 2332132422
S166H 2334332442
S167H 2332313213
S168H 2332134422
S169H 2332213242
S170H 2332342124
S171H 2331334224
S172H 2332313123
S173H 2334232124
S174H 2332434312
S175H 2332113113
S176H 2332231242
S177H 2334242324
S178H 2342132324
S179H 2334432312
S180H 2344323132
S181H 2344244324
S182H 2421232312
S183H 2344342334
S184H 2344332342
S185H 2421331312
S186H 2421323134
S187H 2422443342
S188H 2421344232
S189H 2421334424
S190H 2421334242
S191H 2421342423
S192H 2422331133
S193H 2422311334
S194H 2423121334
S195H 2421312422
S196H 2423211342
S197H 2421134232
S198H 2423134423
S199H 2421123422
S200H 2422343134
S201H 2421242332
S202H 2423123124
S203H 2421323442
S204H 2422331123
S205H 2423124212
S206H 2421324342
S207H 2421234244
S208H 2422434312
S209H 2423213112
S210H 2422113112
S211H 2423133434
S212H 2344324422
S213H 2423132213
S214H 2422312313
S215H 2344242312
S216H 2422113312
S217H 2421124212
S218H 2422344312
S219H 2422323312
S220H 2421131213
S221H 2344313234
S222H 2422313132
S223H 2344331324
S224H 2421321312
S225H 2421123423
S226H 2423211312
S227H 2423212312
S228H 2422112442
S229H 2422321312
S230H 2422133122
S231H 2421231342
S232H 2422443312
S233H 2421321342
S234H 2344311312
S235H 2422134213
S236H 2422431342
S237H 2344312242
S238H 2421331334
S239H 2421211242
S240H 2421124312
S241H 2421334212
S242H 2421313242
S243H 2422343123
S244H 2422131243
S245H 2422113342
S246H 2344244232
S247H 2422313324
S248H 2421311312
S249H 2422133424
S250H 2344342422
S251H 2421344313
S252H 2422334312
S253H 2421134342
S254H 2421323132
S255H 2422131322
S256H 2422134312
S257H 2421244212
S258H 2421332442
S259H 2421231312
S260H 2421324312
S261H 2421342312
S262H 2421233124
S263H 2423123324
S264H 2344332312
S265H 2422342112
S266H 2421233134
S267H 2423112423
S268H 2421242134
S269H 2422342334
S270H 2422312442
S271H 2421234312
S272H 2421331242
S273H 2421211313
S274H 2421231232
S275H 2421343242
S276H 2423133213
S277H 2422431124
S278H 2421244242
S279H 2422434342
S280H 2423133132
S281H 2421121313
S282H 2423112312
S283H 2422134243
S284H 2344313442
S285H 2423134212
S286H 2423113313
S287H 2423124423
S288H 2423131244
S289H 2422134422
S290H 2422433442
S291H 2423123342
S292H 2344323312
S293H 2421312312
S294H 2421343423
S295H 2422334232
S296H 2421323112
S297H 2421133242
S298H 2421242442
S299H 2422331212
S300H 2344243422
S301H 2422344342
S302H 2423134324
S303H 2421334422
S304H 2431212334
S305H 2423324234
S306H 2424331334
S307H 2423442312
S308H 2431242342
S309H 2424432312
S310H 2431224342
S311H 2431233434
S312H 2423242334
S313H 2423423324
S314H 2431231242
S315H 2424334212
S316H 2423234232
S317H 2342332124
S318H 2344212312
S319H 2344233224
S320H 2342343312
S321H 2343132342
S322H 2342332422
S323H 2343432312
S324H 2343424422
S325H 2342332242
S326H 2343311342
S327H 2343342134
S328H 2342334312
S329H 2343321312
S330H 2342432234
S331H 2342344334
S332H 2343421242
S333H 2343213312
S334H 2342431334
S335H 2343134324
S336H 2342421312
S337H 2344234242
S338H 2342334434
S339H 2342313312
S340H 2342312442
S341H 2342344212
S342H 2342324324
S343H 2343212442
S344H 2344224434
S345H 2342232434
S346H 2343424242
S347H 2342434212
S348H 2344223324
S349H 2344224312
S350H 2344231334
S351H 2343234222
S352H 2343223242
S353H 2342322342
S354H 2343112334
S355H 2343213342
S356H 2343323442
S357H 2343123224
S358H 2343121334
S359H 2342334342
S360H 2343312124
S361H 2343132134
S362H 2342442342
S363H 2343234312
S364H 2343132312
S365H 2342232134
S366H 2344232324
S367H 2342334222
S368H 2343124242
S369H 2343112242
S370H 2343112422
S371H 2343213132
S372H 2343423434
S373H 2343224232
S374H 2342243324
S375H 2344221134
S376H 2343242442
S377H 2342424312
S378H 2343431324
S379H 2342312324
S380H 2343243132
S381H 2342433132
S382H 2343433242
S383H 2343231224
S384H 2342313132
S385H 2343113112
S386H 2342322312
S387H 2344223442
S388H 2342423112
S389H 2343231312
S390H 2343442334
S391H 2343124334
S392H 2342313434
S393H 2343234342
S394H 2344232234
S395H 2343422324
S396H 2343243312
S397H 2343121124
S398H 2344231124
S399H 2342423442
S400H 2344213422
S401H 2342213442
S402H 2343433122
S403H 2343312434
S404H 2342244312
S405H 2343424334
S406H 2342421342
S407H 2343324312
S408H 2343432342
S409H 2343421334
S410H 2343134232
S411H 2344223112
S412H 2343233112
S413H 2342433434
S414H 2343223422
S415H 2343132434
S416H 2342321134
S417H 2342323422
S418H 2342232312
S419H 2344234334
S420H 2342233242
S421H 2344211324
S422H 2342234232
S423H 2343423342
S424H 2344224342
S425H 2342423324
S426H 2342442134
S427H 2343124422
S428H 2342321324
S429H 2343121242
S430H 2342424434
S431H 2343242234
S432H 2343342434
S433H 2343442242
S434H 2421344233
S435H 2422323342
S436H 2422433112
S437H 2422313423
S438H 2421311342
S439H 2422342442
S440H 2421323123

New GM Code Series

S000A-S711K, Part 3

S441H 2421122342
S442H 2422343312
S443H 2421343422
S444H 2421342134
S445H 2344324242
S446H 2423132133
S447H 2421331132
S448H 2344342242
S449H 2423112434
S450H 2422313124
S451H 2423134334
S452H 2423124312
S453H 2423112242
S454H 2344323342
S455H 2423124434
S456H 2423133422
S457H 2423113113
S458H 2422343122
S459H 2344312422
S460H 2421133442
S461H 2422134342
S462H 2423123442
S463H 2423121322
S464H 2422124312
S465H 2421234342
S466H 2423132442
S467H 2344242342
S468H 2421243312
S469H 2422324313
S470H 2421231134
S471H 2421324422
S472H 2344334232
S473H 2421331124
S474H 2421313113
S475H 2421134313
S476H 2422343442
S477H 2423134422
S478H 2421123342
S479H 2423134242
S480H 2421131343
S481H 2421344223
S482H 2344312334
S483H 2421233442
S484H 2423213122
S485H 2421342434
S486H 2423124432
S487H 2422133112
S488H 2423132433
S489H 2423112124
S490H 2422331332
S491H 2422123313
S492H 2421244232
S493H 2421132312
S494H 2423134223
S495H 2421133122
S496H 2421122442
S497H 2421234212
S498H 2423133113
S499H 2421212442
S500H 2421342113
S501H 2423124332
S502H 2422132313
S503H 2421213313
S504H 2421334223
S505H 2421131134
S506H 2421342342
S507H 2423134232
S508H 2422113132
S509H 2421312124
S510H 2421311224
S511H 2423131223
S512H 2344324212
S513H 2421234423
S514H 2421131122
S515H 2344322442
S516H 2421233112
S517H 2421123113
S518H 2422121342
S519H 2423122312
S520H 2423123212
S521H 2422313212
S522H 2423132123
S523H 2421232442
S524H 2344344312
S525H 2421313422
S526H 2422113423
S527H 2421334234
S528H 2421243342
S529H 2344313112
S530H 2421324213
S531H 2421231242
S532H 2421213342
S533H 2421133132
S534H 2421121242
S535H 2344342124
S536H 2421132342
S537H 2421242312
S538H 2422133442
S539H 2421331213
S540H 2423123312
S541H 2423131232
S542H 2423121312
S543H 2423113422
S544H 2423123234
S545H 2421223312
S546H 2421131324
S547H 2421243132
S548H 2423213313
S549H 2422123132
S550H 2422332312
S551H 2423113242
S552H 2422131312
S553H 2421224342
S554H 2423121242
S555H 2421312434
S556H 2421243113
S557H 2421124242
S558H 2423132312
S559H 2344242134
S560H 2422131134
S561H 2423134244
S562H 2421133124
S563H 2422133132
S564H 2344313324
S565H 2422131342
S566H 2421331222
S567H 2344243242
S568H 2421313313
S569H 2421343113
S570H 2422332342
S571H 2421243422
S572H 2421213112
S573H 2421331343
S574H 2423121124
S575H 2422323112
S576H 2422344213
S577H 2423123112
S578H 2422313442
S579H 2423132324
S580H 2422311242
S581H 2344242434
S582H 2423124342
S583H 2423133224
S584H 2421322442
S585H 2421134213
S586H 2344243122
S587H 2422431312
S588H 2431313442
S589H 2433223112
S590H 2431334222
S591H 2432424434
S592H 2432434422
S593H 2432424342
S594H 2432124312
S595H 2431334232
S596H 2433131134
S597H 2432121342
S598H 2433244242
S599H 2433211242
S600H 2431343134
S601H 2432131334
S602H 2432233422
S603H 2431322342
S604H 2432433132
S605H 2432244212
S606H 2432342134
S607H 2431331222
S608H 2432113313
S609H 2432211342
S610H 2432344242
S611H 2433124212
S612H 2433424334
S613H 2432334213
S614H 2433113123
S615H 2431344222
S616H 2433242312
S617H 2431323312
S618H 2433124234
S619H 2432343342
S620H 2432421312
S621H 2432234312
S622H 2431323423
S623H 2432442434
S624H 2432432442
S625H 2433121313
S626H 2431313423
S627H 2432334342
S628H 2432243123
S629H 2433231224
S630H 2433242324
S631H 2433213342
S632H 2433224232
S633H 2431334212
S634H 2433231244
S635H 2432312134
S636H 2431322324
S637H 2433234222
S638H 2433124223
S639H 2432324313
S640H 2433122423
S641H 2433242132
S642H 2432431242
S643H 2432113242
S644H 2432423324
S645H 2431331224
S646H 2431322442
S647H 2433122324
S648H 2432343134
S649H 2432213122
S650H 2431342334
S651H 2432234232
S652H 2431342242
S653H 2433243423
S654H 2431324212
S655H 2432233122
S656H 2432442312
S657H 2432334312
S658H 2431332434
S659H 2432332242
S660H 2431332312
S661H 2431323112
S662H 2433132342
S663H 2433123312
S664H 2433223122
S665H 2432342213
S666H 2431343342
S667H 2432123123
S668H 2433132113
S669H 2433234342
S670H 2432242334
S671H 2431324313
S672H 2433421124
S673H 2431334324
S674H 2433223313
S675H 2432231133
S676H 2433124242
S677H 2433132312
S678H 2433134313
S679H 2433134223
S680H 2432434212
S681H 2432124244
S682H 2432434242
S683H 2432122313
S684H 2433231312
S685H 2433221342
S686H 2432124342
S687H 2432134243
S688H 2431313132
S689H 2432442134
S690H 2432123342
S691H 2432331342
S692H 2433424212
S693H 2433124334
S694H 2433131124
S695H 2431323224
S696H 2433123434
S697H 2431343234
S698H 2432112312
S699H 2432423112
S700H 2431324334
S701H 2433423132
S702H 2432334222
S703H 2432243312
S704H 2433124422
S705H 2433423224
S706H 2433131224
S707H 2431324224
S708H 2432213442
S709H 2432243112
S710H 2433244243
S711H 2431323434
S712H 2432113422
S713H 2432233242
S714H 2431344342
S715H 2431343124
S716H 2432312324
S717H 2432134422
S718H 2433233112
S719H 2432423234
S720H 2433423342
S721H 2433134324
S722H 2432343312
S723H 2431332423
S724H 2432342234
S725H 2432124423
S726H 2432134212
S727H 2433112313
S728H 2432343122
S729H 2432123112
S730H 2431344213
S731H 2433112422
S732H 2433124323
S733H 2431342322
S734H 2433123113
S735H 2432313432
S736H 2432242113
S737H 2432232312
S738H 2433243342
S739H 2433242124
S740H 2431322423
S741H 2432113122
S742H 2424342434
S743H 2423343124
S744H 2431311334
S745H 2431213422
S746H 2431223422
S747H 2431312313
S748H 2431242124
S749H 2424323112
S750H 2424332442
S751H 2423231324
S752H 2423431334
S753H 2423431242
S754H 2431242434
S755H 2431133134
S756H 2423421342
S757H 2423321312
S758H 2423234234
S759H 2424233234
S760H 2431132334
S761H 2423233112
S762H 2431131224
S763H 2424312312
S764H 2423231213
S765H 2431223324
S766H 2431244324
S767H 2431231224
S768H 2423322342
S769H 2424433242
S770H 2423313434
S771H 2423422334
S772H 2424424334
S773H 2424323442
S774H 2423344213
S775H 2424221134
S776H 2431122424
S777H 2423231124
S778H 2431122342
S779H 2423313342
S780H 2424432342
S781H 2431124244
S782H 2431132313
S783H 2431234422
S784H 2423244342
S785H 2423343312
S786H 2431122434
S787H 2431133123
S788H 2424431324
S789H 2424423342
S790H 2424343242
S791H 2424434232
S792H 2424433122
S793H 2431134434
S794H 2431232442
S795H 2431221342
S796H 2423421134
S797H 2423231343
S798H 2431134222
S799H 2423423234
S800H 2423443422
S801H 2431242332
S802H 2423244312
S803H 2424342312
S804H 2424212442
S805H 2423342123
S806H 2423342442
S807H 2424231312
S808H 2423244212
S809H 2431212312
S810H 2423342132
S811H 2431311312
S812H 2424233112
S813H 2423343133
S814H 2431313112
S815H 2424421124
S816H 2423223132
S817H 2431224434
S818H 2423323113
S819H 2431134242
S820H 2431213234
S821H 2424243312
S822H 2423312134
S823H 2424311224
S824H 2431232324
S825H 2431124213
S826H 2424334422
S827H 2431221313
S828H 2424321312
S829H 2423313312
S830H 2431223132
S831H 2423343342
S832H 2423442434
S833H 2424234342
S834H 2423232342
S835H 2424421242
S836H 2424231342
S837H 2431244313
S838H 2431244224
S839H 2423434242
S840H 2431132242
S841H 2431243312
S842H 2423324313
S843H 2431233132
S844H 2424233442
S845H 2424342342
S846H 2431121342
S847H 2424213342
S848H 2431244232
S849H 2423231312
S850H 2423342234
S851H 2423424312
S852H 2423243123
S853H 2423232312
S854H 2423213442
S855H 2424243434
S856H 2423434422
S857H 2431212124
S858H 2431223123
S859H 2423312422
S860H 2423344242
S861H 2423424342
S862H 2424234312
S863H 2424312434
S864H 2424344232
S865H 2424324342
S866H 2431124324

New GM Code Series

S000A-S711K, Part 3

S867H 2431223442	S938H 2423323242	S009J 2431323342	S080J 2443342242
S868H 2424423312	S939H 2431121324	S010J 2431344243	S081J 2443131342
S869H 2423442134	S940H 2423342313	S011J 2432134242	S082J 3112432242
S870H 2424421334	S941H 2423233122	S012J 2432342313	S083J 2443123122
S871H 2423344342	S942H 2423322312	S013J 2431331122	S084J 2443134342
S872H 2431122312	S943H 2423233242	S014J 2431344312	S085J 3112134312
S873H 2423233422	S944H 2423234313	S015J 2433232422	S086J 3112243313
S874H 2424343422	S945H 2431234242	S016J 2432332422	S087J 2443423122
S875H 2423433132	S946H 2431123313	S017J 2433243312	S088J 3112422312
S876H 2431242312	S947H 2431211224	S018J 2432332313	S089J 2443213242
S877H 2431223112	S948H 2424343122	S019J 2433231134	S090J 3112231122
S878H 2431213123	S949H 2431231132	S020J 2433421242	S091J 3112442134
S879H 2431131242	S950H 2424342134	S021J 2432342324	S092J 2443344222
S880H 2431121124	S951H 2431133234	S022J 2432231213	S093J 2443434222
S881H 2424424212	S952H 2431231212	S023J 2431322134	S094J 2443311312
S882H 2423343423	S953H 2423223342	S024J 2433234312	S095J 3112342332
S883H 2431134342	S954H 2424334242	S025J 2432131242	S096J 2443244232
S884H 2423243132	S955H 2431131342	S026J 2442323442	S097J 2443131224
S885H 2431242112	S956H 2431131312	S027J 2442433422	S098J 3112331343
S886H 2431213313	S957H 2423342324	S028J 2434221342	S099J 2443424324
S887H 2431234212	S958H 2431234312	S029J 2442212442	S100J 3112213213
S888H 2424324312	S959H 2424313422	S030J 2433433242	S101J 3112232213
S889H 2431312442	S960H 2423243112	S031J 2433431324	S102J 2443313324
S890H 2424234434	S961H 2423342212	S032J 2434321242	S103J 3112311334
S891H 2423423442	S962H 2431244212	S033J 2434431312	S104J 3112324224
S892H 2431233113	S963H 2424321342	S034J 2434432422	S105J 3112322342
S893H 2431123134	S964H 2431132422	S035J 2442443112	S106J 3112243434
S894H 2431221312	S965H 2431231122	S036J 2434234422	S107J 3112232442
S895H 2423313424	S966H 2431233224	S037J 2434242342	S108J 3112332312
S896H 2423442342	S967H 2424213434	S038J 2442233442	S109J 3112132242
S897H 2431311242	S968H 2423242113	S039J 2442322334	S110J 3112313122
S898H 2424423132	S969H 2431234233	S040J 2442442124	S111J 3112343442
S899H 2431242322	S970H 2431233423	S041J 2434234334	S112J 2443323342
S900H 2431224312	S971H 2431123242	S042J 2442323112	S113J 2443434312
S901H 2423243442	S972H 2424243342	S043J 2434212124	S114J 3112323113
S902H 2423221313	S973H 2431134422	S044J 2434323312	S115J 3112133213
S903H 2424244334	S974H 2423344212	S045J 2442133242	S116J 2443422134
S904H 2424213312	S975H 2423423112	S046J 2442123312	S117J 3112123422
S905H 2424231124	S976H 2423323422	S047J 2442233234	S118J 3112433112
S906H 2424244212	S977H 2431242243	S048J 2434343112	S119J 3112233113
S907H 2423312442	S978H 2431234334	S049J 2434234212	S120J 2443324212
S908H 2431231334	S979H 2432442342	S050J 2442233112	S121J 3112321242
S909H 2431234224	S980H 2432123442	S051J 2442432342	S122J 3112132213
S910H 2423421312	S981H 2433113212	S052J 2442432312	S123J 3112342232
S911H 2431242422	S982H 2433243133	S053J 3112431342	S124J 3112231132
S912H 2431312234	S983H 2433134232	S054J 2443432422	S125J 2443123242
S913H 2431243242	S984H 2433421334	S055J 2443323312	S126J 3112243422
S914H 2424423434	S985H 2431324422	S056J 3112423122	S127J 2443224342
S915H 2431243422	S986H 2431313212	S057J 3112324313	S128J 3112313424
S916H 2424433422	S987H 2431331243	S058J 3112244313	S129J 3112112424
S917H 2431134312	S988H 2432313224	S059J 3112123312	S130J 2443423242
S918H 2424331242	S989H 2431324242	S060J 3112132132	S131J 2443132334
S919H 2423324232	S990H 2433133242	S061J 3112134223	S132J 2443431224
S920H 2431133112	S991H 2433132124	S062J 2443323132	S133J 3112331212
S921H 2423243313	S992H 2433422442	S063J 3112331223	S134J 2443133234
S922H 2423343442	S993H 2432231324	S064J 3112122312	S135J 2432243132
S923H 2423443242	S994H 2433123342	S065J 3112422134	S136J 2433221312
S924H 2431313124	S995H 2432342123	S066J 3112243134	S137J 2432421342
S925H 2424243132	S996H 2433424242	S067J 3112344212	S138J 2432422334
S926H 2423323122	S997H 2432133423	S068J 2443123422	S139J 2433213132
S927H 2431312422	S998H 2433113324	S069J 2443313112	S140J 2431342312
S928H 2423231134	S999H 2432313342	S070J 3112334432	S141J 2431332124
S929H 2423424434	S000J 3132134432	S071J 3112234312	S142J 2432134224
S930H 2424312124	S001J 2431342133	S072J 2443212312	S143J 2433213112
S931H 2424232334	S002J 2433134234	S073J 3112332113	S144J 2432244342
S932H 2424212134	S003J 2433422324	S074J 3112312442	S145J 2431343324
S933H 2424312242	S004J 2431343313	S075J 3112242112	S146J 2432431334
S934H 2423432442	S005J 2433244342	S076J 2443422342	S147J 2433133422
S935H 2431124232	S006J 2433122442	S077J 3112242312	S148J 2432331312
S936H 2431123122	S007J 2432233112	S078J 3112123212	S149J 2431343442
S937H 2423434212	S008J 2431332342	S079J 3112343223	S150J 2433244212

New GM Code Series

S000A-S711K, Part 3

S151J 2432231312	S222J 2432312442	S293J 2434324422	S364J 2442342134	S435J 3113432442	S506J 3121123342
S152J 2433212442	S223J 2432131223	S294J 2442311224	S365J 2443112324	S436J 3122113212	S507J 3113212312
S153J 2432344342	S224J 2433132422	S295J 2442121242	S366J 2434313442	S437J 3121344312	S508J 3121131334
S154J 2433113442	S225J 2431324232	S296J 2433442124	S367J 2442243434	S438J 3121243234	S509J 3121342312
S155J 2433243113	S226J 2434434312	S297J 2433432312	S368J 2434423122	S439J 3121122442	S510J 3121233122
S156J 2432133132	S227J 2442231342	S298J 2442324312	S369J 2434422342	S440J 3113434422	S511J 3113122313
S157J 2433231342	S228J 2433433122	S299J 2442124334	S370J 2434313234	S441J 3122131123	S512J 3113322423
S158J 2432313424	S229J 2434231242	S300J 2434422312	S371J 2443113312	S442J 3113342213	S513J 3113231224
S159J 2433223422	S230J 2442243132	S301J 2433442242	S372J 2434243122	S443J 3121242124	S514J 3121242243
S160J 2432323122	S231J 2442113324	S302J 2442112242	S373J 2434421324	S444J 3121343123	S515J 3113323242
S161J 2432211312	S232J 2434323342	S303J 2442432134	S374J 2442321342	S445J 3113224244	S516J 3121131222
S162J 2431321312	S233J 2442124242	S304J 2434434222	S375J 2433442334	S446J 3113212242	S517J 3113443122
S163J 2433224312	S234J 2443113224	S305J 2442124422	S376J 2434431134	S447J 3113224234	S518J 3121231212
S164J 2433132434	S235J 2434242434	S306J 2442112422	S377J 2442213312	S448J 3113232112	S519J 3121132242
S165J 2432112422	S236J 2442431324	S307J 2434242134	S378J 2442334212	S449J 3113324323	S520J 3113223424
S166J 2431342422	S237J 2442321312	S308J 2434431342	S379J 2442112334	S450J 3121243442	S521J 3113423234
S167J 2433223442	S238J 2434424232	S309J 2434432242	S380J 2442343122	S451J 3121124213	S522J 3113123312
S168J 2432124212	S239J 2442132312	S310J 2442332324	S381J 2442123434	S452J 3121324323	S523J 3113243133
S169J 2433131212	S240J 2434424324	S311J 2434224312	S382J 2442423342	S453J 3121234313	S524J 3113224313
S170J 2433232242	S241J 2433432342	S312J 2442434232	S383J 2442331242	S454J 3122121132	S525J 3113231124
S171J 2433242234	S242J 2442433242	S313J 2442443234	S384J 2442321124	S455J 3113422334	S526J 3122121332
S172J 2432344212	S243J 2434422434	S314J 2442443324	S385J 2442432434	S456J 3113132213	S527J 3122124232
S173J 2432322312	S244J 2434224434	S315J 2442344324	S386J 2434344312	S457J 3113243313	S528J 3113321132
S174J 2432133113	S245J 2434244232	S316J 2442243342	S387J 2434231334	S458J 3121213242	S529J 3121133213
S175J 2432423442	S246J 2442423312	S317J 2434244324	S388J 2442213434	S459J 3121212422	S530J 3113124434
S176J 2431334234	S247J 2442344232	S318J 2434311312	S389J 2442123132	S460J 3121334432	S531J 3113242422
S177J 2432322342	S248J 2442231312	S319J 2442313422	S390J 2434332342	S461J 3121213432	S532J 3113431242
S178J 2431331212	S249J 2442244334	S320J 2434312334	S391J 2434223442	S462J 3121342232	S533J 3121244212
S179J 2433424422	S250J 2434233132	S321J 2434213242	S392J 2442334422	S463J 3121313312	S534J 3113213442
S180J 2433123224	S251J 2442113234	S322J 2434342242	S393J 2442133122	S464J 3113442324	S535J 3121233442
S181J 2433213423	S252J 2434332312	S323J 2442133422	S394J 2443121324	S465J 3113423324	S536J 3113342124
S182J 2432242443	S253J 2434223112	S324J 2442434324	S395J 2434334232	S466J 3113312134	S537J 3121313424
S183J 2433242213	S254J 2434322442	S325J 2434242312	S396J 2434213422	S467J 3121323423	S538J 3113312442
S184J 2433211313	S255J 2442423132	S326J 2434212312	S397J 2442331334	S468J 3121332112	S539J 3121334312
S185J 2433234212	S256J 2434233434	S327J 2434223234	S398J 2434342422	S469J 3113324232	S540J 3113121242
S186J 2433243123	S257J 2442312312	S328J 2434324212	S399J 2443113132	S470J 3112443342	S541J 3121324313
S187J 2432231123	S258J 2442313242	S329J 2442332234	S400J 2443112442	S471J 3122123423	S542J 3113231213
S188J 2432443422	S259J 2434433112	S330J 2442113442	S401J 2442113112	S472J 3121232422	S543J 3113344323
S189J 2433242442	S260J 2434312422	S331J 2442234434	S402J 2442231134	S473J 3113213312	S544J 3121231122
S190J 2431313324	S261J 2442323324	S332J 2442421334	S403J 2433433422	S474J 3121242334	S545J 3121242112
S191J 2432313434	S262J 2434422134	S333J 2434324242	S404J 2434313112	S475J 3113233242	S546J 3121123123
S192J 2432213423	S263J 2434331324	S334J 2434223324	S405J 2442334242	S476J 3121312324	S547J 3121123212
S193J 2433123422	S264J 2434233224	S335J 2442132342	S406J 2442132434	S477J 3113221312	S548J 3113322342
S194J 2432424312	S265J 2434232442	S336J 2434221124	S407J 2434423422	S478J 3121331224	S549J 3113221242
S195J 2432244312	S266J 2442324434	S337J 2442323234	S408J 2434431224	S479J 3113132133	S550J 3121231324
S196J 2433122432	S267J 2442213342	S338J 2442134232	S409J 2442112124	S480J 3121121243	S551J 3113312312
S197J 2433243132	S268J 2434232234	S339J 2442423434	S410J 3113122132	S481J 3113121322	S552J 3113112422
S198J 2433423312	S269J 2434342334	S340J 2442424212	S411J 3113132313	S482J 3121234233	S553J 3113131324
S199J 2433233123	S270J 2442343422	S341J 2433443112	S412J 3122123312	S483J 3122113123	S554J 3121132442
S200J 2432443242	S271J 2442342312	S342J 2442343242	S413J 3113434212	S484J 3113124212	S555J 3121312312
S201J 2432324232	S272J 2434232324	S343J 2442124212	S414J 3113242234	S485J 3121212442	S556J 3113113442
S202J 2432323422	S273J 2442442334	S344J 2434221312	S415J 3121133423	S486J 3121243134	S557J 3113342443
S203J 2432421134	S274J 2443113434	S345J 2442243312	S416J 3113124342	S487J 3122121312	S558J 3113421134
S204J 2433423434	S275J 2434224342	S346J 2442132134	S417J 3121324232	S488J 3121124332	S559J 3113313122
S205J 2432121312	S276J 2434211224	S347J 2434423242	S418J 3113242322	S489J 3113443242	S560J 3121321342
S206J 2432132442	S277J 2434342124	S348J 2434234242	S419J 3113344223	S490J 3121243324	S561J 3121313213
S207J 2433213312	S278J 2442342434	S349J 2434243242	S420J 3121133132	S491J 3113424312	S562J 3121234222
S208J 2433113112	S279J 2442232334	S350J 2434313324	S421J 3121342134	S492J 3113132443	S563J 3121213212
S209J 2433131324	S280J 2442123342	S351J 2442234342	S422J 3113131224	S493J 3121324212	S564J 3113213423
S210J 2432342442	S281J 2442334334	S352J 2442324342	S423J 3113323422	S494J 3113211342	S565J 3112443312
S211J 2432213112	S282J 2442121334	S353J 2434311342	S424J 3113212132	S495J 3121243312	S566J 3121344243
S212J 2432212312	S283J 2442421242	S354J 2442213132	S425J 3113213123	S496J 3113224212	S567J 3112133442
S213J 2432313312	S284J 2442234312	S355J 2442424334	S426J 3113134242	S497J 3113324312	S568J 2443431342
S214J 2433131343	S285J 2443113342	S356J 2442244212	S427J 3113343243	S498J 3113213132	S569J 3112131232
S215J 2432232342	S286J 2442332442	S357J 2442131324	S428J 3121324224	S499J 3113312423	S570J 3112112242
S216J 2433112234	S287J 2433434232	S358J 2442122442	S429J 3113242113	S500J 3113132124	S571J 2443132422
S217J 2431334313	S288J 2434344222	S359J 2433442422	S430J 3121343324	S501J 3121323342	S572J 3112321343
S218J 2433223242	S289J 2434323132	S360J 2442312434	S431J 3122112132	S502J 3121132134	S573J 3112242423
S219J 2432331134	S290J 2442342342	S361J 2434212434	S432J 3121322312	S503J 3121221342	S574J 2443243242
S220J 2433122134	S291J 2442312124	S362J 2442134324	S433J 3122123132	S504J 3121332342	S575J 2443242312
S221J 2432323242	S292J 2434243422	S363J 2442433122	S434J 3121313224	S505J 3113133122	S576J 2443324242

New GM Code Series

S000A-S711K, Part 3

S577J 2443422434	S648J 3112131322	S719J 3112344342	S790J 3121331134
S578J 3112434242	S649J 3112123342	S720J 3112431312	S791J 3121243223
S579J 2443224312	S650J 2443422312	S721J 3112213432	S792J 3113422124
S580J 3112243224	S651J 3112123432	S722J 3112123134	S793J 3121323122
S581J 3112113442	S652J 2443132242	S723J 3112134424	S794J 3113431124
S582J 2443122312	S653J 2443134222	S724J 3112131222	S795J 3122124322
S583J 3112212312	S654J 3112332432	S725J 3112424324	S796J 3113123132
S584J 2443311334	S655J 2443131312	S726J 2443133112	S797J 3113321313
S585J 2443324422	S656J 3112233422	S727J 3112124213	S798J 3122121342
S586J 3112124423	S657J 3112134244	S728J 3112422434	S799J 3113132442
S587J 3112342234	S658J 3112234233	S729J 2443234422	S800J 3121212313
S588J 2443442234	S659J 2443342124	S730J 2443431312	S801J 3121343132
S589J 3112234242	S660J 2443344312	S731J 3121123242	S802J 3113243442
S590J 2443421324	S661J 2443231242	S732J 3113134243	S803J 3122113422
S591J 2443343112	S662J 2443231124	S733J 3113243112	S804J 3113133212
S592J 2443312422	S663J 3112213423	S734J 3113421342	S805J 3121331223
S593J 3112123242	S664J 3112234212	S735J 3122113442	S806J 3113233422
S594J 2443423422	S665J 3112324212	S736J 3121332422	S807J 3113223112
S595J 3112313224	S666J 3112243442	S737J 3121244342	S808J 3121321242
S596J 2443231334	S667J 2443433112	S738J 3121234242	S809J 3113231312
S597J 2443432242	S668J 2443442324	S739J 3121243242	S810J 3113211242
S598J 2443213422	S669J 3112324322	S740J 3121244223	S811J 3121234323
S599J 3112313312	S670J 3112434222	S741J 3113123442	S812J 3121124423
S600J 3112231213	S671J 3112231312	S742J 3113344212	S813J 3121331242
S601J 3112343112	S672J 2443122342	S743J 3121134312	S814J 3121224322
S602J 3112123124	S673J 3112234224	S744J 3121233423	S815J 3121134423
S603J 3112234323	S674J 3112312324	S745J 3113423112	S816J 3121232432
S604J 3112344222	S675J 2443312234	S746J 3113244222	S817J 3113243124
S605J 3112332342	S676J 2443234212	S747J 3122113242	S818J 3121313122
S606J 3112242244	S677J 2443243122	S748J 3121342242	S819J 3121122312
S607J 2443221312	S678J 3112122342	S749J 3121133432	S820J 3113424342
S608J 2443124232	S679J 3112421324	S750J 3113121232	S821J 3113113422
S609J 3112334313	S680J 3112133132	S751J 3113113242	S822J 3121134322
S610J 2443313442	S681J 3112232423	S752J 3113244312	S823J 3121233113
S611J 3112313442	S682J 3112134222	S753J 3121344213	S824J 3121332423
S612J 2443134312	S683J 3112243124	S754J 3122123342	S825J 3121311334
S613J 2443424232	S684J 3112131334	S755J 3113223342	S826J 3121132123
S614J 3112244342	S685J 3112134324	S756J 3121223132	S827J 3113342134
S615J 2443242434	S686J 3112113342	S757J 3121342332	S828J 3113343423
S616J 3112313342	S687J 3112234422	S758J 3113134234	S829J 3121343224
S617J 3112242334	S688J 3112422342	S759J 3121232312	S830J 3122124423
S618J 2443223442	S689J 2443242342	S760J 3122131213	S831J 3121334223
S619J 3112331133	S690J 2443124324	S761J 3121244313	S832J 3113311324
S620J 3112323342	S691J 3112321313	S762J 3113134422	S833J 3122123112
S621J 3112313132	S692J 3112244213	S763J 3121313342	S834J 3113224422
S622J 2443431134	S693J 3112134232	S764J 3122131133	S835J 3113243222
S623J 2443342334	S694J 3112122442	S765J 3113123213	S836J 3121242423
S624J 2443233132	S695J 3112313212	S766J 3121223432	S837J 3113234312
S625J 3112331134	S696J 3112331123	S767J 3113321343	S838J 3113323113
S626J 2443221342	S697J 3112322424	S768J 3112442422	S839J 3113421312
S627J 3112332422	S698J 3112243242	S769J 3113134224	S840J 3121324422
S628J 3112132312	S699J 3112134342	S770J 3121124422	S841J 3113423442
S629J 3112343132	S700J 3112133424	S771J 3113224242	S842J 3113244213
S630J 2443134434	S701J 3112344312	S772J 3113244342	S843J 3113231343
S631J 2443342422	S702J 3112131242	S773J 3121134244	S844J 3121234212
S632J 2443322442	S703J 3112132123	S774J 3113232342	S845J 3113421224
S633J 3112322442	S704J 3112334213	S775J 3113342432	S846J 3121213124
S634J 2443234242	S705J 2443223112	S776J 3121134232	S847J 3121123442
S635J 2443321242	S706J 2443213122	S777J 3121124232	S848J 3121124343
S636J 2443443132	S707J 3112331224	S778J 3121321313	S849J 3121313442
S637J 3112242124	S708J 3112324232	S779J 3113233112	S850J 3121223112
S638J 3112433442	S709J 2443243422	S780J 3113224223	S851J 3121132312
S639J 3112213242	S710J 3112343123	S781J 3122122342	S852J 3113134322
S640J 2443122434	S711J 2443242134	S782J 3113243132	S853J 3113133422
S641J 2443232442	S712J 2443133442	S783J 3122112313	S854J 3113134212
S642J 3112132442	S713J 3112312234	S784J 3121132213	S855J 3121131244
S643J 3112213422	S714J 3112232112	S785J 3121334212	S856J 3121313132
S644J 3112343312	S715J 3112124432	S786J 3121323113	S857J 3121223422
S645J 3112312313	S716J 2443443312	S787J 3113212422	S858J 3113342133
S646J 3112343324	S717J 3112334223	S788J 3113132134	S859J 3121122342
S647J 3112213124	S718J 2443131134	S789J 3113221342	S860J 3113231134

New GM Code Series

S000A-S711K, Part 3

S861J 3121123312
S862J 3121324234
S863J 3113123122
S864J 3113342313
S865J 3113112434
S866J 3113342434
S867J 3113121334
S868J 3121331312
S869J 3121312234
S870J 3113344234
S871J 3121332433
S872J 3121231132
S873J 3113123313
S874J 3121242422
S875J 3121221312
S876J 3113442342
S877J 3113132433
S878J 3121343313
S879J 3121232113
S880J 3113424434
S881J 3113132312
S882J 3121124432
S883J 3113344242
S884J 3121223312
S885J 3121322424
S886J 3121324244
S887J 3121134222
S888J 3113342342
S889J 3121224422
S890J 3121344342
S891J 3113131243
S892J 3121244232
S893J 3121344222
S894J 3121322442
S895J 3121123432
S896J 3113213213
S897J 3113224324
S898J 3121131232
S899J 3124421324
S900J 3131124244
S901J 3131324232
S902J 3131122313
S903J 3131134323
S904J 3132322132
S905J 3131221312
S906J 3131123122
S907J 3124433442
S908J 3132233442
S909J 3132131123
S910J 3131332112
S911J 3132332213
S912J 3131132443
S913J 3131131222
S914J 3132121312
S915J 3131243324
S916J 3131213342
S917J 3131131242
S918J 3131243312
S919J 3132122423
S920J 3131322424
S921J 3131321342
S922J 3131134243
S923J 3132211313
S924J 3131244212
S925J 3124343442
S926J 3132342123
S927J 3124434342
S928J 3132334424
S929J 3131234223
S930J 3124422134
S931J 3131323113
S932J 3132321242
S933J 3131324323
S934J 3132213423
S935J 3132124313
S936J 3132234212
S937J 3132134312
S938J 3132311312
S939J 3131313123
S940J 3124313442
S941J 3131224313
S942J 3131231213
S943J 3124423422
S944J 3132323213
S945J 3132332123
S946J 3131124332
S947J 3131124422
S948J 3132244323
S949J 3131224322
S950J 3132322442
S951J 3124434312
S952J 3131312312
S953J 3124244324
S954J 3132134213
S955J 3132243432
S956J 3131213424
S957J 3131134423
S958J 3131231312
S959J 3132234432
S960J 3132244232
S961J 3131344243
S962J 3131313423
S963J 3131331243
S964J 3132243342
S965J 3132121343
S966J 3131243133
S967J 3131243222
S968J 3131334423
S969J 3131242422
S970J 3131223424
S971J 3132212423
S972J 3131334213
S973J 3131322342
S974J 3132123423
S975J 3124324212
S976J 3131132213
S977J 3131224224
S978J 3124311342
S979J 3131232113
S980J 3131342134
S981J 3124422434
S982J 3131324312
S983J 3124243422
S984J 3132234342
S985J 3132112313
S986J 3131123212
S987J 3131244342
S988J 3132124322
S989J 3132311342
S990J 3124334232
S991J 3132243122
S992J 3131343123
S993J 3132123112
S994J 3132124224
S995J 3124323132
S996J 3132113124
S997J 3124424232
S998J 3132113442
S999J 3132134224
S001K 3131123312
S002K 3123112422
S003K 3123344242
S004K 3123242213
S005K 3122424312
S006K 3123123113
S007K 3124224434
S008K 3122134212
S009K 3122421134
S010K 3123344322
S011K 3124221342
S012K 3122342442
S013K 3122334242
S014K 3122434422
S015K 3124233224
S016K 3124242312
S017K 3124242342
S018K 3123232312
S019K 3123122442
S020K 3123133242
S021K 3123113312
S022K 3122312424
S023K 3123443442
S024K 3123113213
S025K 3122332313
S026K 3122312134
S027K 3122422334
S028K 3122344242
S029K 3123131212
S030K 3123233212
S031K 3123324343
S032K 3122343424
S033K 3123122312
S034K 3123312124
S035K 3122431334
S036K 3123344232
S037K 3124224312
S038K 3123232242
S039K 3122342132
S040K 3123343243
S041K 3123313113
S042K 3123324312
S043K 3123232133
S044K 3122131324
S045K 3123133112
S046K 3123134232
S047K 3123421124
S048K 3124221124
S049K 3124213242
S050K 3122332242
S051K 3123112242
S052K 3123243342
S053K 3123231232
S054K 3123242312
S055K 3122312432
S056K 3122421312
S057K 3123344312
S058K 3122311312
S059K 3122334213
S060K 3123234212
S061K 3123132342
S062K 3123324342
S063K 3123324212
S064K 3123131224
S065K 3123224213
S066K 3123244224
S067K 3124223442
S068K 3123213342
S069K 3123133124
S070K 3122311342
S071K 3123224342
S072K 3123132434
S073K 3123231244
S074K 3122312442
S075K 3124223324
S076K 3123311224
S077K 3124212124
S078K 3123223242
S079K 3122313113
S080K 3124232324
S081K 3123211313
S082K 3123124422
S083K 3123422324
S084K 3123113423
S085K 3123433242
S086K 3123421334
S087K 3123134432
S088K 3122331243
S089K 3123134213
S090K 3123221242
S091K 3123223422
S092K 3122421342
S093K 3123342212
S094K 3124231334
S095K 3122344324
S096K 3123424334
S097K 3123234312
S098K 3123321243
S099K 3122131312
S100K 3122324312
S101K 3122131224
S102K 3124242124
S103K 3123343242
S104K 3123121342
S105K 3123431324
S106K 3123112334
S107K 3124234242
S108K 3123232442
S109K 3123322442
S110K 3122334423
S111K 3123344234
S112K 3122331322
S113K 3123244212
S114K 3123423434
S115K 3122134313
S116K 3123212422
S117K 3123423312
S118K 3122322132
S119K 3123234222
S120K 3123442242
S121K 3122334312
S122K 3123223313
S123K 3123133422
S124K 3122423442
S125K 3123323124
S126K 3123211242
S127K 3123132112
S128K 3122134234
S129K 3122424434
S130K 3122332132
S131K 3123243242
S132K 3123323213
S133K 3124234212
S134K 3123131134
S135K 3123433422
S136K 3123132124
S137K 3122313342
S138K 3122442342
S139K 3122331342
S140K 3124231242
S141K 3124224342
S142K 3123432312
S143K 3122442312
S144K 3122132312
S145K 3122332443
S146K 3123133442
S147K 3123243113
S148K 3123233442
S149K 3123113132
S150K 3123324423
S151K 3124223112
S152K 3122323313
S153K 3123244242
S154K 3123311312
S155K 3123234342
S156K 3123123122
S157K 3124234422
S158K 3123321342
S159K 3122313424
S160K 3122334222
S161K 3123342432
S162K 3123321312
S163K 3122343312
S164K 3123323112
S165K 3123242133
S166K 3124233132
S167K 3122134324
S168K 3123424422
S169K 3123122134
S170K 3123124323
S171K 3122343342
S172K 3123342244
S173K 3123423132
S174K 3124232234
S175K 3123343113
S176K 3123124223
S177K 3123434232
S178K 3123424212
S179K 3123422442
S180K 3122343244
S181K 3123131124
S182K 3122323242
S183K 3124212312
S184K 3123122423
S185K 3122344232
S186K 3123244322
S187K 3123124242
S188K 3122133122
S189K 3123433122
S190K 3122443242
S191K 3123342124
S192K 3122423112
S193K 3122323422
S194K 3122331124
S195K 3122424342
S196K 3123224432
S197K 3122132113
S198K 3122342212
S199K 3123124313
S200K 3123443112
S201K 3123313422
S202K 3123123434
S203K 3123242134
S204K 3122132423
S205K 3122342122
S206K 3122134242
S207K 3123232422
S208K 3123344223
S209K 3123224312
S210K 3123224232
S211K 3122433132
S212K 3122322432
S213K 3123432342
S214K 3123312422
S215K 3123231124
S216K 3122423234
S217K 3122431242
S218K 3123321232
S219K 3123131312
S220K 3122343434
S221K 3123312434
S222K 3123242324
S223K 3122343112
S224K 3122133124
S225K 3123113124
S226K 3123231342
S227K 3123123342
S228K 3124242434
S229K 3123212442
S230K 3124211224
S231K 3124221312
S232K 3122324212
S233K 3123423224
S234K 3123121313
S235K 3122323442
S236K 3124233434
S237K 3123342113
S238K 3122322342
S239K 3123313242
S240K 3122423324
S241K 3123242442
S242K 3123134324
S243K 3123244233
S244K 3123424242
S245K 3123311342
S246K 3123124212
S247K 3123134312
S248K 3123423342
S249K 3123323442
S250K 3123243422
S251K 3123343422
S252K 3123112312
S253K 3123244243
S254K 3122133424
S255K 3122312242
S256K 3124213422
S257K 3123112442
S258K 3123124334
S259K 3123213112
S260K 3123342342
S261K 3122434212
S262K 3123243324
S263K 3123113442
S264K 3122323134
S265K 3122442124
S266K 3122313434
S267K 3123242123
S268K 3122343124
S269K 3124212434
S270K 3122342313
S271K 3124223234
S272K 3122432442
S273K 3122344212
S274K 3123242342
S275K 3123121324
S276K 3123243312
S277K 3123234422
S278K 3131231132
S279K 3131231122
S280K 3131122324
S281K 3131134223
S282K 3124431342
S283K 3132131212
S284K 3124331324
S285K 3131134212
S286K 3131313213
S287K 3131223112

New GM Code Series

S000A-S711K, Part 3

S288K 3131132124
S289K 3132113423
S290K 3131124213
S291K 3124313324
S292K 3124313112
S293K 3131211334
S294K 3131342123
S295K 3131121322
S296K 3131133442
S297K 3124312234
S298K 3132242432
S299K 3132242132
S300K 3124244232
S301K 3132131133
S302K 3132312424
S303K 3124434222
S304K 3124312422
S305K 3131243124
S306K 3131242112
S307K 3124342334
S308K 3124322442
S309K 3124311312
S310K 3131232422
S311K 3131233422
S312K 3132324212
S313K 3133132442
S314K 3133224423
S315K 3211312442
S316K 3133244312
S317K 3211244342
S318K 3211242423
S319K 3133242124
S320K 3211313432
S321K 3133212442
S322K 3133134242
S323K 3133243243
S324K 3133122432
S325K 3132344233
S326K 3133124343
S327K 3132342344
S328K 3133242213
S329K 3211312132
S330K 3133113424
S331K 3213244223
S332K 3213233424
S333K 3211344234
S334K 3213134213
S335K 3212332312
S336K 3213231242
S337K 3212243132
S338K 3213124323
S339K 3213122424
S340K 3213243113
S341K 3212131212
S342K 3213113423
S343K 3213311342
S344K 3211323423
S345K 3213113432
S346K 3213234422
S347K 3212244342
S348K 3211334223
S349K 3212342312
S350K 3213213113
S351K 3212324342
S352K 3212234213
S353K 3213243242
S354K 3211324232
S355K 3212211312
S356K 3211344223
S357K 3213124313
S358K 3212334244
S359K 3212132423
S360K 3212121313
S361K 3212343422
S362K 3213123112
S363K 3212242313
S364K 3211342232
S365K 3212331322
S366K 3212234342
S367K 3213244243
S368K 3212344232
S369K 3213131312
S370K 3213242313
S371K 3213322312
S372K 3212331232
S373K 3213242213
S374K 3132323124
S375K 3124423122
S376K 3124431224
S377K 3124344222
S378K 3131133422
S379K 3131134242
S380K 3124433112
S381K 3131212442
S382K 3131132312
S383K 3124424324
S384K 3124323342
S385K 3131123224
S386K 3124343112
S387K 3132132113
S388K 3131332423
S389K 3131332443
S390K 3132233123
S391K 3132242213
S392K 3132313113
S393K 3132334244
S394K 3132243423
S395K 3132133442
S396K 3131212313
S397K 3124423242
S398K 3131321313
S399K 3124323312
S400K 3124432422
S401K 3131342313
S402K 3131233112
S403K 3124324422
S404K 3131131324
S405K 3131342442
S406K 3124332312
S407K 3131234313
S408K 3131224234
S409K 3131312132
S410K 3132213112
S411K 3131132432
S412K 3131242322
S413K 3132113212
S414K 3131344213
S415K 3131133122
S416K 3124431312
S417K 3131213432
S418K 3131342213
S419K 3131244313
S420K 3131132313
S421K 3131132134
S422K 3131213212
S423K 3124431134
S424K 3131213122
S425K 3124324242
S426K 3131243442
S427K 3131133213
S428K 3132324342
S429K 3132242312
S430K 3124321242
S431K 3132324423
S432K 3131123132
S433K 3131124432
S434K 3124243242
S435K 3132212242
S436K 3132244242
S437K 3131121334
S438K 3131123432
S439K 3131321132
S440K 3131134232
S441K 3131211242
S442K 3131324223
S443K 3124342422
S444K 3132243244
S445K 3131231343
S446K 3132243113
S447K 3124344342
S448K 3124422342
S449K 3132242443
S450K 3132242122
S451K 3131344234
S452K 3132342212
S453K 3124344312
S454K 3124422312
S455K 3131221343
S456K 3211243442
S457K 3211231134
S458K 3133224212
S459K 3211313424
S460K 3211242322
S461K 3133213112
S462K 3132344224
S463K 3133243113
S464K 3211211242
S465K 3211232422
S466K 3211221313
S467K 3133212242
S468K 3133234243
S469K 3133112432
S470K 3133134222
S471K 3211212312
S472K 3133223123
S473K 3211231124
S474K 3211243134
S475K 3132343242
S476K 3211231343
S477K 3211242243
S478K 3211313212
S479K 3133244234
S480K 3133122424
S481K 3133242313
S482K 3211223422
S483K 3211242112
S484K 3133234423
S485K 3133211313
S486K 3211224234
S487K 3133242113
S488K 3211313123
S489K 3133124223
S490K 3211233423
S491K 3133124312
S492K 3211231223
S493K 3211244224
S494K 3133223213
S495K 3133121243
S496K 3133134213
S497K 3211233113
S498K 3133242133
S499K 3133112422
S500K 3211244313
S501K 3211243313
S502K 3211213122
S503K 3133124213
S504K 3133124432
S505K 3133243124
S506K 3211231213
S507K 3132342442
S508K 3211223113
S509K 3132343112
S510K 3133212423
S511K 3133243423
S512K 3211233132
S513K 3211312313
S514K 3133242342
S515K 3211244212
S516K 3132343424
S517K 3211231312
S518K 3133244322
S519K 3211244242
S520K 3211233122
S521K 3133134422
S522K 3133221232
S523K 3211313342
S524K 3133232213
S525K 3132344324
S526K 3211234313
S527K 3133131244
S528K 3221124312
S529K 3223313213
S530K 3221331312
S531K 3213343113
S532K 3221331322
S533K 3223243242
S534K 3221242312
S535K 3221234213
S536K 3221211313
S537K 3221342112
S538K 3223223132
S539K 3221311312
S540K 3223344213
S541K 3213344312
S542K 3223321242
S543K 3221243124
S544K 3221243424
S545K 3223211342
S546K 3223213313
S547K 3221224312
S548K 3221242132
S549K 3221344232
S550K 3221342423
S551K 3221334243
S552K 3221131134
S553K 3223234244
S554K 3221234423
S555K 3221231232
S556K 3221123113
S557K 3223342422
S558K 3221233122
S559K 3221342124
S560K 3213342244
S561K 3223322442
S562K 3221223312
S563K 3221313313
S564K 3223312312
S565K 3221343423
S566K 3221312424
S567K 3223133123
S568K 3221324213
S569K 3223312442
S570K 3213242134
S571K 3212242132
S572K 3213223442
S573K 3212134224
S574K 3213124234
S575K 3213243342
S576K 3212342133
S577K 3213312242
S578K 3211324244
S579K 3211344213
S580K 3212342432
S581K 3213211312
S582K 3211342134
S583K 3213211342
S584K 3213313212
S585K 3212243342
S586K 3211334212
S587K 3213233124
S588K 3213313123
S589K 3211331242
S590K 3211322423
S591K 3213131343
S592K 3213232313
S593K 3212242443
S594K 3213243423
S595K 3213232442
S596K 3212244242
S597K 3211342332
S598K 3213113212
S599K 3213131213
S600K 3211321312
S601K 3213323124
S602K 3212243123
S603K 3211331224
S604K 3211344243
S605K 3211342312
S606K 3211324313
S607K 3213131123
S608K 3213221242
S609K 3213121343
S610K 3212123113
S611K 3213312312
S612K 3213324244
S613K 3213212423
S614K 3213113122
S615K 3212233123
S616K 3213234212
S617K 3213242432
S618K 3213324423
S619K 3212244212
S620K 3213213442
S621K 3213132113
S622K 3213224212
S623K 3212243422
S624K 3212231243
S625K 3212213423
S626K 3211343312
S627K 3212123424
S628K 3212124422
S629K 3212342122
S630K 3212134313
S631K 3212312422
S632K 3212113124
S633K 3212334422
S634K 3213121312
S635K 3211323112
S636K 3213233442
S637K 3213124223
S638K 3213231222
S639K 3213134312
S640K 3211332422
S641K 3213112313
S642K 3213112442
S643K 3213133124
S644K 3212343112
S645K 3212342212
S646K 3212324213
S647K 3213234342
S648K 3212332442
S649K 3212231332
S650K 3212131132
S651K 3213223313
S652K 3211324224
S653K 3212331244
S654K 3212122342
S655K 3213244233
S656K 3212313112
S657K 3212131122
S658K 3213133442
S659K 3212311313
S660K 3212233134
S661K 3211334312
S662K 3212112312
S663K 3213242123
S664K 3213213423
S665K 3213342113
S666K 3213242342
S667K 3212323313
S668K 3213131133
S669K 3212213113
S670K 3221323134
S671K 3223113112
S672K 3221344224
S673K 3221224342
S674K 3223234233
S675K 3221231243
S676K 3221134313
S677K 3221343112
S678K 3213344224
S679K 3223342243
S680K 3221242443
S681K 3223113424
S682K 3221232312
S683K 3221334423
S684K 3221244233
S685K 3221124232
S686K 3223244233
S687K 3221123423
S688K 3221132422
S689K 3213344234
S690K 3223313424
S691K 3221213423
S692K 3223243113
S693K 3223312132
S694K 3221133112
S695K 3223231322
S696K 3221344313
S697K 3221313113
S698K 3221213112
S699K 3221323122
S700K 3221332313
S701K 3221121313
S702K 3221342212
S703K 3223134342
S704K 3221244242
S705K 3221234242
S706K 3223313124
S707K 3221342344
S708K 3221233132
S709K 3223323422
S710K 3221323313
S711K 3221131212

TNL

THE CASH STATION

by Mark Gerhardt

NCR 5088

Manufacturer
NCR

Model #
5088

Handle Type
Square

Handle Location
Below dial center

Handle Rotation
Clockwise

Dial Center to Handle Center
6-1/4 inches

Dial Location
Left side of door

Number of Locking Bolts
3

Door Locking Bolt Locations
6-3/8", 17-3/8", 28-3/8" down from top of door

Door Locking Bolt Diameter
3/4 inch

Door Thickness to Bolt Center
2-1/4 inches

Door Thickness to Lock Case
1-5/8 inches

Door Thickness to Back of Lock
2-3/4 inches

Lock Type
LaGard 3330, UL Group 2 with alarm switch

Lock Case Thickness
1-1/8 inches

Number of Wheels
3

THE CASH STATION

NCR 5088

Driver Location
Rear drive

Lock Handing
Vertical Down (VD)

Drop in Location
72

Forbidden Zone
0-20

Lock Opening Procedures
4xL to first number. 3xR to second number. 2xL to third number. 1xR until dial stops.

Lock Drill Point
7/8-inch from dial center at 72. Align wheel gates at lever fence.

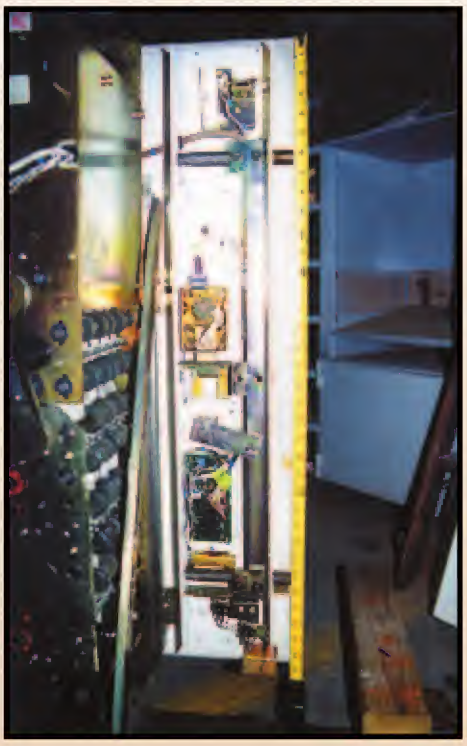
Lock Relock Trigger Type
Wire spring. Activates when combination lock cover is removed or punched.

Lock Relock Trigger Drill Point
7/8-inch right of dial center. 1-5/8 inches down. Hook with a wire and pull towards front of safe.

External Relock Device Type
This unit has an unusual relock device. Attached to the combination lock bolt is a plate that blocks and unblocks and carrier bar. Attached to the bolt plate is the relock device plate, which slides down to the bottom door locking bolt. If the lock is punched the relock device plate disengages and drops down to block the carrier bar at the bottom door locking bolt.

External Relock Device Drill Point
3-1/2 inches down from dial center on center. Lift relock device plate up to open.

Special Notes: *The problem with the relock device drill point is you will be drilling through a split in two pieces of hardplate carefully placed to damage drill bits. An optional drill point would be to side drill at 2-1/4 inches back from door surface and 27-1/2 inches down from the top of the door. Use a small screwdriver in the hole and bend the relocking bar up. It only needs to be bent up about 1/8 inch to clear and open. This option is much easier unless the ATM is enclosed.*

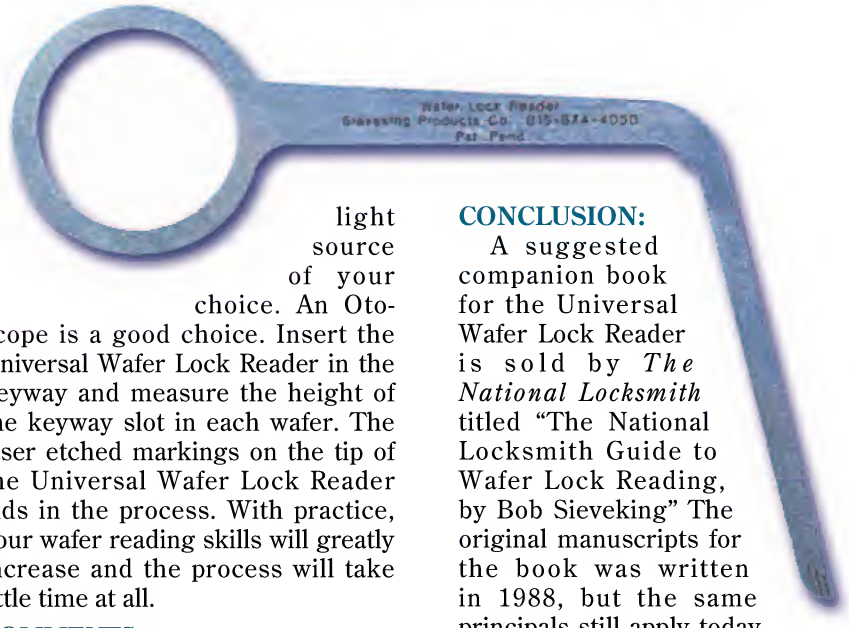


TNL

Taking Industry Products for a

TEST DRIVE!

Universal Wafer Lock Reader, by Sieveking Products Co.



Every once in a while a tool comes along, that is so simple in its design, that you pass by and don't give it much notice. Then you see someone using the tool and you are amazed at how well it works. It has no moving parts, and is by no means automatic. As a matter of fact, it's about as basic as a stick. The tool in discussion is the Universal Wafer Lock Reader.

CONSTRUCTION:

The tool is made of hardened stainless steel, so it will never rust and will last a lifetime. It is laser engraved with permanent wafer depth markings at the tip. This one simple tool can be used to read nearly all readable wafer locks. The Universal Wafer Lock Reader comes with a small fold-up booklet that explains the basic concept of wafer lock reading, shows how to use the tool, and gives directions for a few of the more common auto applications.

HOW IT WORKS:

Wafer lock reading is not a new concept. Wafer lock reading was once a commonly learned and utilized technique for originating keys. Over the generations, however, the technique of wafer lock reading seems to have lost popularity to key impressioning. Many don't really understand the power of the concept, so they skip over the principals and file it under the general heading "things I'll probably never use." Opting instead to choose the key impressioning method when in actuality, wafer reading is easier, faster and causes less damage to the lock.

The wafer lock reading concept is easy. First light the keyway with a light source of your choice. An Otoscope is a good choice. Insert the Universal Wafer Lock Reader in the keyway and measure the height of the keyway slot in each wafer. The laser etched markings on the tip of the Universal Wafer Lock Reader aids in the process. With practice, your wafer reading skills will greatly increase and the process will take little time at all.

COMMENTS:

When coupled with some basic knowledge and a little practice, the Universal Wafer Lock Reader, will allow you to make keys for 7 and 8 wafer Chryslers, 10 wafer GM autos, 8 and 10 wafer Fords, and most wafer tumbler cam and desk locks in minutes. You don't need to disassemble a door to search for the code on the cylinder, that may or may not be there. You don't need to disassemble a cylinder to make a key and you don't need to struggle trying to identify impression marks.

As a precursor to impressioning, wafer lock reading will cut your impressioning time in half. When you become proficient, you might want to read a door cylinder and make a key as a means of opening a car. It is one way to avoid the liability of using a tool in a door that has been worked on by some non-locksmith.

CONCLUSION:

A suggested companion book for the Universal Wafer Lock Reader is sold by *The National Locksmith* titled "The National Locksmith Guide to Wafer Lock Reading, by Bob Sieveking" The original manuscripts for the book was written in 1988, but the same principals still apply today. The information is still as powerful today as it was when the book was written. Probably more so, as the Chrysler and Ford pin tumbler cylinders fade into obscurity and the newer "wafer locks" take their place. The National Locksmith Guide to Wafer Lock Reading, and the Universal Wafer Lock Reader should be a part of every locksmiths "kit." The Universal Wafer Lock Reader will fit easily in any pick case. The skill is one that should rank right along with picking and impressioning.

For more information contact:
Sieveking Products Co.
P.O. Box 4287
Rockford, IL 61110
Phone: (815) 874-4030
Fax: (815) 874-5713
Circle 290 on Rapid Reply. TNL

IN SUMMARY:

PRICE: Retail Price for the "Universal Wafer Lock Reader" is $24.00.

DESCRIPTION: The Universal Wafer Lock Reader is a tool used to depress the wafers in a wafer lock, allowing the locksmith to judge their relative height, and determine the key cuts for the lock.

COMMENTS: The tool is easy to use and the instructions are well written and illustrated.

TEST DRIVE RESULTS: The tool works quite well. However, you will need to practice to become proficient.